IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 11, Issue 5 Ser. I (Sep. – Oct. 2022), PP 16-22
www.iosrjournals.org

Relationship between the demographic and socio-economic characteristics, dietary practices, morbidity status and nutritional status of PLHIV

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Abstract
Health is a human capital and itsvital in market production and non-market supplies, it is therefore, crucial that all individuals and households capitalize in health since it impacts wholly their capability for productivity and wealth generation. For PLHIV, optimum nutritioncan facilitate them to attain a healthful body mass, boost their immunity, put off disease and decrease time taken on admission to hospital. It assists the body to develop and sustain strength, enable treatments to function maximally and empowers them to deal with the side effects of drugs. Co-morbidities are widespread amongst PLHIV and majority are associated to health practices that are addressable by using dietary diversity and early control of opportunistic illnesses thus advancing health outcomes and eventually decreasing expenses (Becker et al., 2020)(Wiginton et al., 2022; Mbuli et al., 2022; Mutiso & Muthama, 2019).

Date of Submission: 01-09-2022 Date of Acceptance: 13-09-2022

I. Introduction

A well-adjusted nourishment can advance good nutritionalstatus of individuals with HIV/AIDS andpause the development of HIV to AIDS, it can boost the immunity and consequently improvingtheir capacity to defend themselves from the opportunistic illnesses. The majority of the PLHIV in resource poor locations are disadvantaged from accessingoptimum amounts of a well-adjusted nourishment (*PEPFAR*, 2021). However, the accessibility of very active ART has capacity to diminish the threat of ill health, boost the lifespan and stop the progression of HIV illness; absence of sufficient finance, therapy, upkeep, maintenance and deprived nourishment contribute to greater ill health and death of PLHIV in emerging economies (Barbier et al., 2020). Appearances of persistent HIV illness combined with elongated ART regimen include, cardiovascular disease, stroke, dyslipidemia, insulin resistance and diabetes particularly amongst theobese (Woldu, 2020; Koethe, 2021; Choi, 2022). Therefore, it'scritical that all on danger of non-communicable disease (NCDs) must go through nutritional management. Proof from a another researchlikewise indicates that malnourished PLHIV are 2–6 times extra prone to die inside the initial 6 months of antiretroviral therapy in comparison to individuals with normal body mass index (BMI) (Alebel et al., 2021). Observations prove that between people living with HIV, menwho are living withinthe countryside, with family earnings lesser than two US dollarsdaily, illiterateor having tertiary level education were considerably correlated with being malnourished (Becker et al., 2020). Furthermore, the incidence of abdominal infections, opportunistic infections, CD4 count , eating complications, antiretroviral therapy status, existing medical illness, World Health Organization (WHO) stage, period of antiretroviral therapy, nourishment maintenance and nutritional variety, food security, and latrine access were related as beingcauses for malnutrition (Khatri et al., 2020).

Malnutrition and economic development are linked. Economic growth or decline clearly leads to reduced/increased malnutrition both across and within countries. Estimates suggest that a 10% annual decline in national income increases moderate/severe wasting prevalence by 14.4–17.8%(Headey & Ruel, 2020). Data from African countries indicate that close to half of household income is spent on food: Nigeria (56.4%)); Kenya (46.7%), Cameroon (45.6%), Algeria (42.5%)(Siddiqui et al., 2020). People with high socioeconomic status (SES) are more likely to have healthier food habits, whereas people with low SES have dietary profiles less consistent with nutritional recommendations or dietary guidelines, hence contributing to their poorer health status(Lewis et al., 2020). Nutritional intake raises productivity, which in turn leads to high economic growth, likewise, higher economic growth can have a positive impact on the nutritional status of a nation(Siddiqui et al., 2020). The foods we eat, and the nutrients they should provide, are the most important continuing environmental factors influencing our growth, development, functional abilities and health(WHO, 2022a).Limited studies have

explored the relationship between the demographic and socio-economic characteristics, dietary practices, morbidity status and nutritional status of PLHIV and this research aims to fill in the gap.

1.2 Problem statement

Despite improved nutrition facilitating education, gender equality, reducing poverty and improving life opportunities(UNICEF, 2021),being considered foundational to sustainable development where the Power of Nutrition's work directly contributing to progress in SDG 2 and indirectly helping all SDGs, economic decision factors such as food price and income do influence people's food choices. Moreover, food costs are a barrier for low income-families to healthier food choicesand affect personal nutrition status and health. Poverty is one of the major socio-economic causes of variations in nutrient intake, and it also impacts nutrient requirements(Grosso et al., 2020).Malnutrition can lead to the development of diseases and chronic health conditions, long-term effects of malnutrition include a higher risk of obesity, heart disease and diabetes(WHO, 2022b).

II. Methodology

2.1 Study Design

A cross sectional analytical research design was embraced in the study to analyze the quantitative data. The design was the most suitable for this research because the variables under test cannot be influenced by the study; they were used as they are in their natural state.

2.2 Study Population

This included the 498 adult PLHIV above 18 years of age both males and females, proved to be HIV positive, appearing in the Comprehensive Care Clinic (CCC) at the Narok County Referral Hospital and who agreed on the informed consent to participate in this study. Adult patients attending the clinic for the first time, bed ridden or mentally disturbed were omitted.

2.3 Sample Size Determination

The required sample size Computation was done by applying the Fisher formula [54] whereby n= $[z^2pq/d^2]$, Consequently, the total sample for the study was 110 + 11 = 121 participants. Purposive sampling was used to select Narok county referral hospital and the PLHIV attending the comprehensive care clinic at the hospital. Simple random sampling was used to choose the 121 respondents from the PLHIV. Every 4th person was nominated for the study in so as to have a uniform representation of both men and women in the sample (that is 498/121 =4).

2.4 Data Collection Tools

Primary data was key in this study as the investigator sought to find out actual statistics from the focus population. A researcher administered structured questionnaire was utilized. A 24-hour recall questionnaire was used to establish the foods that the client had eaten within the past 24 hours. Food Frequency Questionnaire (FFQ) was utilized to evaluate the regularity, source and sufficiency of the nutrients the client had eaten in a period of 7 days. A Focus Group Discussion, with about 8 to 10 persons through an open discussion by an expert moderator was accomplished by use an FGD guidebook to guarantee reliability of the assorted FGD teams captured. A key informant guide qualitative in-depth interviews with the health workers at the CCC were held. Those who contributed included a clinician, nurse, lab technologist, nutritionist and a HIV testing counselor. An observation checklist was utilized to obtain more facts on the condition of the client. The anthropometric International Journal of Sciences: Basic and Applied Research (IJSBAR) (2019) Volume 46, No 2, pp 13-30 20 form was obtained and utilized to document the height and the weight of the clients. This facilitated recording of the bodily position of clients records. In terms of Height using the height meter, weight using adult weight scale, MUAC using adult MUAC tape and a measuring tape for Waist – Hip Ratio.

2.5 Data Analysis

Data gathered from open-ended questions was corrected, coded and recorded into a computer spreadsheet in a standard set-up to permit the analysis of descriptive statistics and inferential statistics using SPSS 22.0 version computer package. Nutrisurvey computer package was also utilized to analyze dietary intake data while WHO cutoff points were used to analyze participants' nutritional status. A body mass index of < 18.5, 18.6 – 24.9, 25 – 29 and > 30 computed as underweight, normal, overweight and obese nutritional status respectfully and controlled for sex and age of the patients. A MUAC of 0 – 21 cm denoted by a Red color on the measuring tape signifies severe malnutrition, 21- 23 cm indicated by the Yellow color on the measuring tape signifies moderate malnutrition and above 23 cm shown by Green color on tape signifies nonexistence of under nutrition for adults. The measures of central tendency and dispersion; mean median, mode and standard

deviations were used to analyze descriptive statistics i.e. demographic and socioeconomics data. Anthropometric data analysis was done using mean and standard deviation for BMI, MUAC and WHR which were correlated with dietary intake, morbidity and social demographic variable in order to establish the relationship between the variables at a P value of P<0.

2.6 Ethical Considerations

Permission was sought from Kenyatta University Graduate School and Ethical Review Committee. The research authorization was obtained from the National Commission of Science and Technology (NACOSTI) and the clearance from Narok County Referral Hospital administration. An informed consent was attained for all respondents before testing and launching the research. In the consent form profits of the research were clarified and risks contained in involvement in the research expounded to the participants. Privacy of the statistics to be gathered from the clients was guaranteed. Participation in the study was voluntary and the participants had the permission to leave at any stage of the research without losing the assistances from the therapy facility. A number was assigned to each respondent and at no time were their names revealed to anybody. Respondents confidentiality and secrecy was secured by safeguarding that no names showed on the report. Any measurements were done in a secluded consultation area.

III. Results

3.1 Demographic and Socio-Economic Characteristics of Research Participants

The research aimed to determine the age of the participants and the outcomes expose that majority of the clients totaled 42 (35%) age ranged around 38-47 years, 41 (34%) were in the range of 28-37 years and beyond 48 years stood at 33 (28%). The outcomes illustrate that majority 105 (87.5%) of the participants were the heads of households. On sex of the clients the observations reveal that 52% were male and 48% female. The outcomes in Table 2 display that most of the participants 51 (42.5%) were wedded, 24 (20%) separated, 21 (17.5%) singles, and 19 (16%) widowed. The research tried to establish if religion has an effect on the nutritional status of the PLHIV. The research reveals that the majority of the participants 66 (55%) belonged to the Protestants religion and 50 (42%) Catholics.Most of the participants that is 55.8% attained primary education and merely 2.5% accomplished tertiary education. concerning occupation, majority of the participants 49.2% were casual laborers with merely 3.3% either jobless or without formal work. The research also aimed to establish the impact of income on the nutritional uptake by PLHIV. Majority households 37.5% had very low income level of between Kshs 1,000 to Kshs 5,000. Whereas 6.7% earned above Kshs 20,000.'*Our ability to seek medical assistance when we are sick is also affected by the lack of finances'* a respondent said '*many of our colleagues suffer a lot at home because they come from very poor families and they are not able to get the required care in terms of food, medication and even movement'*.

3.2 Nutrition status

So as to evaluate the nutritional status of PLHIV, BMI, MUAC, and Waist Hip Ratio (WHR) were utilized. These methods are usually utilized to measure patients' nutritional status for approval to admission and discharge from HIV associated nutritional programs for instance Food by Prescription (FBP) and Integrated Management of Malnutrition (IMAM). Nutritional Status by Mid Upper Arm Circumference (MUAC):The researcher adopted the limits of magnitude endorsed by (UNICEF, 2009) for adults MUAC of ≤ 21 cm which represents severe malnutrition, 21- 23 cm represents moderate malnutrition and ≥ 23 cm represents normal nutrition for adults. The indication is that 89.2% of the clients attained the accepted threshold of > 23 cm showing a normal level of muscle and fats which suggests they were safe. Merely 5.8 % had moderate MUAC level of 21 – 23 cm and the remainder 5 % had severe malnutrition as exhibited by the low MUAC level of <21 cm.Nutritional Status by Body Mass Index (BMI):The participants' BMI was calculated and the outcomes exhibited in Table 4. These statistics were utilized to advocate that the PLHIV be granted appropriate nutrition interventions like ready to use therapeutic food, ready to use supplementary food or flour-based food based on BMI classification. The acceptable threshold for consideration as having a normal body mass index is one is between 18.5 – 24.9 as espoused by WHO (2004). The majority of the participants that is 60.0 % exhibited normal weight as their BMI was between 18.5 – 24.9, followed by 29.5% who exhibited an underweight measurement BMI below or < 18.5 and 10.5% were overweight with a BMI of 25-29.99. Nutritional status by Interpretation of the Waist Hip Ratio (WHR):The waist hip ratio is extremely crucial in assessing the health status of a PLHIV. The stipulated threshold cut off points for males and women are; < 0.8 as normal for women, > 0.8 – 0.88 as increased risk and > 0.88 as high risk for females while for men cut off points of < 0.9 as normal health, > 0.9-1.02 as increased risk and >1.02 as high risk. This figures agree with the Kenya National Action Plan 2018-2022 which shows that females are more at risk of non-communicable diseases (NCDs) (MOH, 2018). The results show that most of the male patients 50.8% had a normal Waist Hip Ratio of < 0.9 cm while only 49.2% had an increased risk WHR of > 0.9-1.02.The research also showed that among the females'

majority that is 89.5% exhibited a WHR of 0.8 – 0.88 meaning they had an elevated risk for Waist Hip Ratio, a mere 10.5 % exhibited a normal WHR.

3.3 Dietary Practices based on 24-hour Dietary Recall

Statisticswere scrutinizedestablishedon the WHO (2003) referencesto gaugeif the respondentsgotacceptablenutrients. The research determinedthe water intake, protein, fat, carbohydrates, dietary fiber and cholesterol. The mean value was matchedto the recommended nutritional value and the proportioncalculatedto verifyhow many people living with HIV were eating the recommended nutrients. Majority of the participants(80%) were eatingsufficientenergy and attained the requiredmeasureof 3355 kcal and 2848 kcal for men and womenin that order. The men ate a mean of 2755 kcal whereaswomen consumed2453 kcal.Precisely, 82.1% of the men and 86.1% of the womenattained the prerequisiteenergyintake. For protein it was found that all of the participantsboth men at 138.6% and women with 135.4% attained above the prerequisiterecommendations. The menate79g of protein versusthe endorsed57g whereaswomenhad 65g in contrast tothe recommended 48g signifyingthat the participantstookbeyondadequateprotein in theirfood.regardingfat, the resultsrevealthat the majorityof the participants 60% men and 65% women were consumedaveragely 12g and 13g correspondinglyevaluatedagainst the neededon a daily basisof 20 and 35gcorrespondingly. Thusthe majorityparticipantsate insufficientfats in theirfood. On average the majorityof the participants were consumedbeyondthe recommended quantitiesof carbohydrates. For both men and women, the recommended quantitiesspanfrom 45-65 carbohydrates per/day.As Regards dietary fiberconsumption, the outcomesillustratethat on generallyparticipantsate80.6% for men and 92% of womendenotingthat the mostattained their recommended consumptiondaily. Averagely,menate25g comparison to the recommended quantityof 31g whereaswomenate 23g comparison to the 25g recommended. On cholesterol, the recommended quantityought tobe below 300mg for both men and women. Only 16.3% of the menattained the allowance recommended whereasfor women only 15% attained the quantitiesrecommended.

The teston whether the consumptionof vitamin by the respondentsattained the recommended quantities,outcomesdivulgedthat ingestionof particularvarietiesof vitamins was excessivecomparison to recommended quantitiesfor both men and women. They were; Vitamin A (µg) at 130% men and 160% women, Vitamin C (mg) at 148.5% men and 134.8% women, Vitamin B1 (mg) at 180.8% men and 170% women. Ingestingfor Vitamin B2 (mg) was reasonableat 73.8% for men and 95.5% women, but minimalVitamin E (mg) amountsat 42.7% for men and nearlyat recommended amountat 96.0% for women.Nonetheless, ingestingfor vitamin B6 (mg) at 50% men and at 46.9% for women and folic acid (µg) at 22.6% for men and 24.4% for women were inadequate.On findings ifparticipants were meetingtheir minerals requirements calculated in milligrams according to recommended daily allowance in their diet, resultsimpliedthat the respondentshad adequatequantities for sodium at 32.2% of men and 57.6% of womencorrespondinglysignifyingthat most were insidethe range of the obligatorylimitof lower than2300mg. Minerals that were usedbeyondnormalcomprised of; Magnesium (330%)men and (244%)women and phosphorous (200.7%) men and (173.1%)women. Other minerals like potassium (32.4%) men and (24.1%)women, calcium (41.7%) men and (49.1%)women, iron (72.22%) men and (34%)women and zinc (44.79%) men and (50.16%)women were consumptionwas below the recommended quantities.When one participant was asked what a balanced diet is the answer was;*"a balanced diet consist of the three foods, carbohydrates, protein and vitamin."*This showed that participants may not have been aware of minerals and sources.

Concerning the cereals 19.3%participantsdeclaredthat they ate the cereals once weekly and 16.9 % said they ate per day. The outcomesalso displaythat 61.6% of the participantsboughtthe food stuffand the majorityrevealedthat the it was notsufficient,indicating that the main problem was the low income which restrictedtheir capacityto acquisitionand utilizecereals daily.Most of the respondents ate the tubersonce a weekly (23.3%),signifyingthat the clients were not acquiringsufficientnutritional worthof what they are anticipatedto gainfrom the roots (mainly Irish potatoes, sweet potatoes and cassava). Purchasing was the main source which again isrestrictivedue to low purchasing power. Just10.5% said the quantitythey were consuming wasenoughit alsoillustrated that regardlessof the elevatednutritional worthof roots, the clients were not receivingsufficientdue to the prohibitive price.It's alsoclear that the chiefsource of the pulseswas also frombuying and only the beans were being produced by 22.5% of the participantsand second was cowpeas.

Animal protein meat was consumed by 22.2% participants once a week while milk was the animal protein consumed daily by 42.5% of the clients. In terms of production 19.2% of the animal protein was by the participants and 18% was bought. The participants who said they were getting adequate provision were 27.3% but 18.9% confirmed the inadequacy of the animal protein. Production ofmilk and eggs was high among participants at their homes and so they were capable of having and consuming enough.Vegetables are the main source of vitamins, minerals and roughage. The outcomesdisplaythat just14.1% of the participants were eating the particularvegetables daily, also it exposedthat 38.5% of the vegetables were boughtand justa few indictedown production or donations. Those who said the vegetables products were enough were 15.18%

showing that few of the PLHIV among ate the vegetables. The datashows that of all the food categories to indicatedin the respondents' recall inside 7 days,' vegetables consumed most frequently.Nonetheless, 41.2% of the participants were buying and production was by just 4.2%. On adequacy 23.3% said the vegetables were adequate while 23.8% said they not enough. The most consumed vegetables wereSukuma wiki, , tomatoes, cabbage, managu and spinach.Just11.8% of the participants consumed diversof fruits and just once weekly, 4.8% ate twice, 4.3% thrice and just3.4% consumed daily. The commonest fruits were bananas, oranges,avocados, and watermelon and 21.5% had tobuy. Justbananas and avocados were in production amongparticipants. On adequacy only 10.5% of the participants said they were eating enough of the fruits.

Participants were requested to indicate which of the meals were consumed frequently among them breakfast, lunch, supper and snacks.This was to find out if they had enoughnourishmentand determine thedieteticpractices.Majority of the participants 55% consumed breakfast, 44 and for lunch 60% said sometimes, and most at 80% consumed supper.one participant had this to say on frequency, *'we need to at least consume them 5 times daily and not less than 3 times.* However, another one interjected, '*that is the expectancyfor the majorityof us howeverwe can't afford even the 3 meals in a day due to costs of the foods and we are not able to produce and we don't have very consistentearningsso we only managewith whatever we have'*. On donation *'donations can't last for long as it is i*nportions' another one interjected '*we require assistance to boostour revenueas that is major problem'.*

3.4 Morbidity and Health Seeking Behavior of the Respondents

Whether the clients had been sick in the previoustwo weeks,the outcomesdemonstrated that the majorityof the participants numbering 72 wereillof whom 42 (58%) were men and 30 (42%) women. The remaining 48 didn't suffer anyillness in the previoustwo weeks and 44% were men and 56% women.Considering those 72 participants who indicated to have been ill in the previous two weeks.The majorityof the participants 30.6% revealedthat they were affected by pneumonia, 12.5% sickness was from Upper Respiratory Tract Infection (URTI), 15.3% said they got ill from other illnessesincludingcoughing, diarrhea and skin infections. Just1.4% were from infected by malaria. Participants who said the illness that affected them were 50 in the previous two weeks and 22 gave no response. Theparticipants were alsorequestedto specifyhow quicklythey pursuedtherapyfor infectionconsidering the number of days taken. The outcomes in figure 6 shows that most of the participants 56.9% soughttherapy within 5 days, 16.7% sought medicationin between 5-15 days while 26.4 % of the participants did not respond to the question.The research also sought to determinehow the participants managed theirinfections. The researchoutcomeswere also based on the number that specifiedthat they were ill in the last three months (n=72).

The outcomesdisplaythat most of the clients 44.4% sought treatmentfrom the hospital, 27.8% managed their ailment from home using recommended food stuffs, and 15.3% used herbs while 12.5% did not have a detailedmethod of managing theinfections. The outcomesfurther illustratethat most females preferred going to the hospitals compared to men who preferred to manage their ailments using food stuff and herbs. It was also vitalto know from among those respondents who attended hospitals (n=32) what reason made them choose the hospital facility they attended to getmedication. The results are presented in table 12.On why they need a balanced diet a participantanswered *"It enhances the body immunity system, body development and effective use of drugs.*

The outcomesdisplaythat most participants 31.2% choose the facility because of other reasons that included the attitude of the health workers and availability of drugs, 25% of the participantsspecifiedthat they chose the facility for medicationbecause of its accessibility, while 6.2 % said that they went to the facility because they had been referred and 3.1% said the facility was near home. The rest 34.4% did not answer to the question.It was also essentialto find out whether the participants completed medicineas instructedor not. The responseswere based on the percentagethat had revealedthat they were sick and went to hospital formedication. Only 43.75% of the participants were able to complete their medicineas per the doctor's prescription, 25% did not complete their medicinewhile 31.25% did not answer the statement. The study further pursuedto verifythe causewhy the 8 participants did not complete theirmedicine. The results were shown in Table 18.The outcomes showedhalf of the participantsspecifiedthat they did not complete their medicinedue to scarcityof cashto purchasethem while another half said they did not complete for other reasons including; experiencing side effects as skin rush, nausea and vomiting.

The outcomesindicatethat among those who impliedthey suffered side effects, most thought that this could be because of lack of suitablenourishmentduring the time of taking themedicine. Some clients who did not complete their medicinedue to side effects said it was due to reaction by the body to the specificdrugs. A total of 37 participants indicated that they had completed their medicineand only 6 (17%) had experienced side effects from the medicinecompared to the 84% who had not experienced any side effects.

Among the 27 who had not completed their medicine17 (63%) said that they did not have any side effects while (10%) said they had side effects from themedicine.The participants were asked indicate some of the side effects they suffered frommedicine. The results were exhibited based on only 24 responding to the

statement. The outcomesdemonstratethat the most common side effect from medicineamong the participantsincluded; vomiting with a response rate of 54.2%, followed by heavy sweating 16.7%, nausea 12.5% and diarrhea 12.5%.Among the challenges that the patients face while seekingmedication, time taken by the participantsto reach the nearest health facility was considered.The outcomesindicatethat for the majority participants 50%, neededbetween 20-45 minutes to reach to their nearest health facility, 34.4% neededless than 20 minutes' walk while 16.6% neededmore than an hour to get to the nearest health facility. The outcomesdisplaythat the majorityof the participants 31.25% said that they utilizea motor cycle while 3.12% said that they have to use a vehicle as the mode of transport to the health facility. Moreover,the distance the participants were requestedto specifyany other challenge inhibitingthe participantsfrom attending clinics.

The statistics illustratethat among the other challenges blockingthe clients from attending health care facilities are lack of finances with a response rate of 28.1%, the facilities are very far 6.2% while 3.1 % said that there is no other means of transport available- one has to walk. The rest 62.5 % did not respond to the statement. On morbidity the respondents answered, '*we must frequently visit the hospital for checkups to avoid the opportunistic infections which tend to weaken the body and make it more vulnerable to other diseases*. '*However, the challenge is that sometimes we have to travel for long distances for lack of money to get this medical attention, sometimes some prefer just to stay at home and manage the sickness instead of struggling to reach the hospital*'.

The outcomesindicatethat most of the participants 40.6% said that they just resolveto stay at home since they are unable to get to the health facility. It was also documentedthat 46.9 % said they use other means (includes; ignoring e.g. headache/cough, using food and local herbs) while 12.5% said that they lentmoney to get to the health facility formedication.The researchwantedto ascertainwhether the participantstake traditional food to manage the illness and if so which ones are used. The outcomesindicatethat only 20 participantssignifiedthat they used food stuff to manage their illness. However, 15% used greens such as spinach and pumpkin leaves; another 15% used saget (spider flower), managu (black nightshade) and amaranths. When asked to specify which infectionsthey manage using the diversetypes of food stuff.The outcomesdisplaythat 15% of the participants used different foods e.g. Spinach,pumpkin leaves, spider flower, black nightshade and amaranths to manage illnesssuch as; Diarrhea, vomiting and constipation while 10% said they used food tomanage colds and flu. On the important foods for the PLHIV, the respondentsanswered, "*That we should take a lot of green vegetables (Mboga), fruits and waterto help us maintain the body systems and enhance the immunity against otheropportunistic diseases".*

Food Taboos and Beliefs:Examples of taboos and beliefs; E.g. Maasai taboos restrict intakeof wild animals, chicken and fish, useof vegetables is limited since it's considered livestock feed. The belief that land is mainly for grazing livestock in some areas leads to reducedcrop production and consumption affecting diversification. The men are prioritized in food serving consequentlyless and poor-quality food is given to children.Most participants said they were not affected by the taboos and beliefs attached to the foods however, Table 21 gives a breakdown as follows; sick people 30.8% women 29.2%, children 23.3%. Only 5.8% of the men were affected by food shortages.Food shortages was considered as a period when families had to consume less food and of poor diversity either due to lack of money or food itself like during drought periods.Clinical Observation Health Related Problems:Severe fatigue and fever were notedamong the majorityclients while headache was moderate. Fever was there but in mild cases. Body changes could be seen in some clientsdisplayingsevere signs of malnutrition and also some clients suffered dryness of the mouth moderately and some severely.

IV. Discussion

Relationship between Demographic and Socio-Economic Characteristics, Dietary Intake, Morbidity Status and Nutritional Status

The regression analysis summary shows that the three independent variables (dietary intake, morbidity and social demographic factors) combined have a weak correlation (r= 0.138, 0.220 and 0.208) with the measures of nutritional status (BMI, MUAC and WHR) respectively. None of these relationships is significant at a $P > 0.05$. The three null hypotheses were all accepted because the tabulated $F_{(5,113)} = 2.31$ was much higher than the calculated $F_{(5,113)} = 0.437$; 1.152 and 1.026 respectively.

An imbalance in nutrient consumption was obvious as dietary intake of certain nutrients was either in excess or inadequate. Those nutrients that the consumption was inadequate included: fat (60%) cholesterol (16.3%), it's important to note here that fat is the source of fat-soluble vitamins like A, D, E and K and this might be the reason why vitamin E especially for the male (Male-42.7%) was very low. Other nutrients with insufficient consumption was very were: Vitamin B_6 consumption Female (46.9%; Male -50.0%) and note that in the guidelines for treatment of TB, Vitamin B_6 is prescribed to all patients, folic – acid Female (24.4%; Male

(22.6%,), Iron Female (34.0%); Male (72.22%), Potassium Female (24.1%); Male (32.4%), Calcium Female (49.1%; Male (41. 7%) and Zinc Female (44.79%); Male (50.16%). The consumption of vitamin A Female (160.0%); Male (130.5%) was above RDA and its usually supplemented to PLHV.

4:1 Conclusion

There was increased morbidity and poor nutrition status among the PLHIV with up to two thirds of the respondents indicating that they had been sick in the past two weeks which can be attributed to the nutrients imbalance.

4:2 Recommendation

The three measures of nutritional status used in this study (BMI, MUAC and WHIR) may not be adequate alone as predictors of nutritional status among adult PLHIV and there is need to strengthen nutrition biochemical test in all health facilities.

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