

**The Prevalence of Malnutrition on Medical Wards of the
University Teaching Hospital**

By

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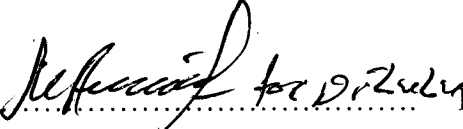
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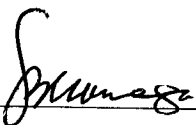
This dissertation of **Dr. BROWN KAMANGA** has been approved as fulfilling the requirements or partial fulfillment of the requirements for the award of Master of Medicine in **INTERNAL MEDICINE** by the University of Zambia.


Examiners

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DECLARATION

I hereby declare that the work presented in this dissertation had not been presented either wholly or in part for any other degree and is not currently submitted for any degree.

Signed  _____
(Student)

Signed  _____
(Supervisor)

DEDICATION

To My Wife, Children and My Father for their encouragement.

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I wish to register my special acknowledgements to the following for their important contributions:

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LIST OF ABBREVIATIONS

ACC	United Nations Administrative Committee on Coordination
AIDS	Acquired immunodeficiency syndrome
BMI	Body mass index
CARMEN	Carbohydrate Ratio Management in European National diets
CHD	Coronary heart disease
CVD	Cardiovascular disease
DALY	Disability-adjusted life year
DASH	Dietary approaches to stop hypertension
DEXA	Dual-energy X-ray absorptiometry
DHA	Docosahexaenoic acid
dmf	Decayed, missing, filled primary (teeth)
DMF	Decayed, missing, filled permanent (teeth)
dmft	Decayed, missing, filled primary teeth
DMFT	Decayed, missing, filled permanent teeth
DONALD	Dortmund Nutritional and Anthropometric Longitudinally Designed Study
ECC	Early childhood caries
EPA	Eicosapentaenoic acid
EPIC	European Prospective Investigation into Cancer and Nutrition
ERGOB	European Research Group for Oral Biology

FAOSTAT	Food and Agricultural Organization of the United Nations Statistical Databases
FER	Fat to energy ratio
GDP	Gross domestic product
GISSI	Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto Miocardico
GNP	Gross national product
HBP	High blood pressure
HDL	High-density lipoprotein
HFI	Hereditary fructose intolerance
HIV	Human immunodeficiency virus
HOPE	Heart Outcomes Prevention Evaluation
IARC	International Agency for Research on Cancer
IDDM	Insulin-dependent diabetes mellitus
IGT	Impaired glucose tolerance
IHD	Ischemic heart disease
IUGR	Intrauterine growth retardation
LDL	Low-density lipoprotein
MGRS	Multicoated growth reference study (i.e. the WHO MGRS study)
mRNA	Messenger ribonucleic acid
MSG	Monosodium glutamate

MUFA	Monounsaturated fatty acid
NCD	Non communicable disease
NGO	Nongovernmental organization
NIDDM	Non-insulin-dependent diabetes mellitus
NSP	Non-starch polysaccharides
PUFA	Polyunsaturated fatty acid
RCT	Randomized controlled trial
SCN	ACC Subcommittee on Nutrition
SFA	Saturated fatty acid
T1DM	Type 1 diabetes
T2DM	Type 2 diabetes
VLDL	Very low-density lipoprotein
WCRF	World Cancer Research Fund
WHR	Waist: hip circumference ratio or waist: hip ratio

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ABSTRACT

Malnutrition is one of the most common associated clinical presentations of patients admitted to the medical wards at the UTH with various medical conditions. It may be a predisposing factor to the disease condition or may be the result of the underlying disease process. Whatever the reason might be, the consequences of malnutrition are an increased predisposition to disease and hospitalization, with increased loss of man hours at work place resulting in reduced productivity or contribution to the socioeconomic state of the country.

A cross sectional study was carried out at the UTH to determine the prevalence of malnutrition among patients admitted to the medical wards in relation to their anthropometric measurements, income, gender and dietary characteristics. 288 patients completed a full clinical evaluation on admission over a period of 6 months. Anthropometric measurements done were Weight, Height, Mid-arm circumference, Triceps skin fold and the BMI was calculated. Dietary and income characteristics, the effect of gender, HIV infection and the impact of other co-existing diseases were assessed.

The study was able to show that the majority of patients had a BMI of less than 20 and that the commonest associated or underlying disease was pulmonary tuberculosis followed by HIV infection. Malnutrition was also common in patients in low income groups especially those earning below K200, 000.

It was shown that gender did not predispose patients to the development of the malnourished state. The diet of the patients did not have a significant role on malnutrition, implying that low income and the underlying or associated disease condition were the important contributors or risk factors in the development of malnutrition.

Chapter one

1.1 Introduction and review of Literature

Malnutrition has always played an important role in the Medical world and previously, a WHO Study Group on Diet, Nutrition and Prevention of Noncommunicable Diseases, had met in 1989 to make recommendations regarding the prevention of chronic diseases and the reduction of their impact (1).

The Consultation recognized that the growing epidemic of chronic disease afflicting both developed and developing countries was related to dietary and lifestyle changes and undertook the task of reviewing the considerable scientific progress that has been made in different areas. For example, there is better epidemiological evidence for determining certain risk factors, and the results of a number of new controlled clinical trials are now available. The mechanisms of the chronic disease process are clearer, and interventions have been demonstrated to reduce risk.

During the past decade, rapid expansion in a number of relevant scientific fields and, in particular, in the amount of population-based epidemiological evidence has helped to clarify the role of diet in preventing and controlling morbidity and premature mortality resulting

from noncommunicable diseases (NCDs). Some of the specific dietary components that increase the probability of occurrence of these diseases in individuals, and interventions to modify their impact, have also been identified.

Furthermore, rapid changes in diets and lifestyles that have occurred with industrialization, urbanization, economic development and market globalization, have accelerated over the past decade. This is having a significant impact on the health and nutritional status of populations, particularly in developing countries and in countries in transition. While standards of living have improved, food availability has expanded and become more diversified, and access to services has increased, there have also been significant negative consequences in terms of inappropriate dietary patterns, decreased physical activities and increased tobacco use, and a corresponding increase in diet-related chronic diseases, especially among poor people. Food and food products have become commodities produced and traded in a market that has expanded from an essentially local base to an increasingly global one. Changes in the world food economy are reflected in shifting dietary patterns, for example, increased consumption of energy-dense diets high in fat, particularly saturated fat, and low in unrefined carbohydrates. These patterns are combined with a decline in energy expenditure that is associated with a sedentary lifestyle --- motorized transport, labour-saving devices in the home, the phasing out of physically demanding manual tasks in the workplace, and leisure time that is preponderantly devoted to physically undemanding

pastimes. Because of these changes in dietary and lifestyle patterns, chronic NCDs --- including obesity, diabetes mellitus, cardiovascular disease (CVD), hypertension and stroke, and some types of cancer --- are becoming increasingly significant causes of disability and premature death in both developing and newly developed countries, placing additional burdens on already overtaxed national health budgets.

Nutrition is coming to the fore as a major modifiable determinant of chronic disease, with scientific evidence increasingly supporting the view those alterations in diet have strong effects, both positive and negative, on health throughout life. Most importantly, dietary adjustments may not only influence present health, but may determine whether or not an individual will develop such diseases as cancer, cardiovascular disease and diabetes much later in life. However, these concepts have not led to a change in policies or in practice.

In many developing countries, food policies remain focused only on under nutrition and are not addressing the prevention of chronic disease. Even the under nutrition mainly focuses on nutrition and there is very little work done in adult populations. The Impact of HIV on the macro and micro economies of developing Countries have been documented and subsequent consequences well understood.

The global burden of chronic diseases

Diet and nutrition are important factors in the promotion and maintenance of good health throughout the entire life course. Their role as determinants of chronic NCDs is well established and they therefore occupy a prominent position in prevention activities (1). The latest scientific evidence on the nature and strength of the links between diet and chronic diseases is examined and discussed. This section gives an overall view of the current situation and trends in chronic diseases at the global level. The chronic diseases considered in this report are those that are related to diet and nutrition and present the greatest public health burden, either in terms of direct cost to society and government, or in terms of disability-adjusted life years (DALYs). These include obesity, diabetes, cardio-vascular diseases, cancer, osteoporosis and dental diseases.

The burden of chronic diseases is rapidly increasing worldwide. It has been calculated that, in 2001, chronic diseases contributed approximately 60% of the 56.5 million total reported deaths in the world and approximately 46% of the global burden of disease (1). The proportion of the burden of NCDs is expected to increase to 57% by 2020. Almost half of the total chronic disease deaths are attributable to cardiovascular diseases; obesity and diabetes are also showing worrying trends, not only because they already affect a large proportion of the population, but also because they have started to appear earlier in life. The chronic disease problem is far from being limited to the developed regions of the world. Contrary to widely held beliefs, developing countries are increasingly suffering from high levels of public health problems related to chronic diseases.

In five out of the six regions of WHO, deaths caused by chronic diseases dominate the mortality statistics (1). Although human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), malaria and tuberculosis, along with other infectious diseases, still predominate in sub-Saharan Africa and will do so for the foreseeable future, 79% of all deaths worldwide that are attributable to chronic diseases are already occurring in developing countries (2). It is clear that the earlier labelling of chronic diseases as “diseases of affluence” is increasingly a misnomer, as they emerge both in poorer countries and in the poorer population groups in richer countries. This shift in the pattern of disease is taking place at an accelerating rate; furthermore, it is occurring at a faster rate in developing countries than it did in the industrialized regions of the world half a century ago (3). This rapid rate of change, together with the increasing burden of disease, is creating a major public health threat which demands immediate and effective action. It has been projected that, by 2020, chronic diseases will account for almost three-quarters of all deaths worldwide, and that 71% of deaths due to ischemic heart disease (IHD), 75% of deaths due to stroke, and 70% of deaths due to diabetes will occur in developing countries (4). The number of people in the developing world with diabetes will increase by more than 2.5-fold, from 84 million in 1995 to 228 million in 2025 (5). On a global basis, 60% of the burden of chronic diseases will occur in developing countries. Indeed, cardiovascular diseases are even now more numerous in India and China than in all the economically developed countries in the world put together (2).

Modern dietary patterns and physical activity patterns are risk behaviors that travel across countries and are transferable from one population to another like an infectious disease, affecting disease patterns globally.

While age, sex and genetic susceptibility are non-modifiable, many of the risks associated with age and sex are modifiable. Such risks include behavioral factors (e.g. diet, physical inactivity, tobacco use, alcohol consumption); biological factors (e.g. dyslipidemia, hypertension, overweight, hyperinsulinaemia); and finally societal factors, which include a complex mixture of interacting socioeconomic, cultural and other environmental parameters. Diet has been known for many years to play a key role as a risk factor for chronic diseases. What is apparent at the global level is that great changes have swept the entire world since the second half of the twentieth century, inducing major modifications in diet, first in industrial regions and more recently in developing countries. Traditional, largely plant-based diets have been swiftly replaced by high-fat, energy-dense diets with a substantial content of animal-based foods. But diet, while critical to prevention, is just one risk factor. Physical inactivity now recognized as an increasingly important determinant of health, is the result of a progressive shift of lifestyle towards more sedentary patterns, in developing countries as much as in industrialized ones. Recent data from São Paulo, Brazil, for example, indicate that 70--80% of the population are remarkably inactive (8). The combination of these and other risk factors, such as tobacco use, is likely to have an additive or even a multiplier effect, capable of accelerating the pace at which the chronic disease epidemic is emerging in the developing countries.

The need for action to strengthen control and prevention measures to counter the spread of the chronic disease epidemic is now widely recognized by many countries, but the developing countries are lagging behind in implementing such measures. Encouragingly, however, efforts to counteract the rise in chronic diseases are increasingly being assigned a higher priority. This situation is reflected by the growing interest of Member States, the concerned international and bilateral agencies as well as non-Governmental organizations in addressing food and nutrition policy, health promotion, and strategy for the control and prevention of chronic diseases, as well as other related topics such as promoting healthy ageing and tobacco control. The 1992 International Conference on nutrition specifically identified the need to prevent and control the increasing public health problems of chronic diseases by promoting appropriate diets and healthy lifestyles (9--11). The need to address chronic disease prevention from a broad-based perspective was also recognized by the World Health Assembly in 1998 (12) and again in 1999 (13). In 2000, the World Health Assembly passed a further resolution on the broad basis of the prevention and control of non communicable diseases (14), and in 2002 adopted a resolution that urged Member States to collaborate with WHO to develop "...a global strategy on diet, physical activity and health for the prevention and control of non communicable diseases, based on evidence and best practices, with special emphasis on an integrated approach..." (15). Several factors have constrained progress in the prevention of chronic diseases. These include underestimation of the effectiveness of interventions, the belief of there being a long delay in achieving any measurable impact, commercial pressures, institutional inertia and inadequate resources.

In working with advertising, media and entertainment partners, there is a need to stress the importance of clear and unambiguous messages to children and youths. Global “health and nutrition literacy” requires a vast increase in attention and resources. Many studies show a relationship between health and income, with the poorest sections of the population being the most vulnerable. Poor people are at an increased social disadvantage in terms of the incidence of chronic diseases, as well as access to treatment. They also show lower rates of acceptance of health-promoting behaviors compared with other sectors of society. Thus, policies need to favour the poor and appropriately targeted, as poor people are most at risk and have the least power to effect change.

The double burden of diseases in the developing world Hunger and malnutrition remain among the most devastating problems facing the majority of the world’s poor and needy people, and continue to dominate the health of the world’s poorest nations. Nearly 30% of humanity are currently suffering from one or more of the multiple forms of malnutrition (19). The tragic consequences of malnutrition include death, disability, stunted mental and physical growth, and as a result, retarded national socioeconomic development. Some 60% of the 10.9 million deaths each year among children aged under five years in the developing world are associated with malnutrition (20). Iodine deficiency is the greatest single preventable cause of brain damage and mental retardation worldwide, and is estimated to affect more than 700 million people, most of them located in the less developed countries (21). Over 2000 million people have iron deficiency anemia (22).

Vitamin A deficiency remains the single greatest preventable cause of needless childhood blindness and increased risk of premature childhood mortality from infectious diseases, with 250 million children under five years of age suffering from sub clinical deficiency (23). Intrauterine growth retardation, defined as birth weight below the 10th percentile of the birth-weight- for-gestational-age reference curve, affects 23.8% or approximately 30 million newborn babies per year, profoundly influencing growth, survival, and physical and mental capacity in childhood (24). It also has major public health implications in view of the increased risk of developing diet-related chronic diseases later in life (25--31). Given the rapidity with which traditional diets and lifestyles are changing in many developing countries, it is not surprising that food insecurity and under nutrition persisting the same countries where chronic diseases are emerging as a major epidemic. The epidemic of obesity, with its attendant co morbidities --- heart disease, hypertension, stroke, and diabetes --- is not a problem limited to industrialized countries (32). Children are in a similar situation; a disturbing increase in the prevalence of overweight among this group has taken place over the past 20 years in developing countries as diverse as India, Mexico, Nigeria and Tunisia (33). The increasing prevalence of obesity in developing countries also indicates that physical inactivity is an increasing problem in those countries as well.

In the past, under nutrition and chronic diseases were seen as two totally separate problems, despite being present simultaneously. This dichotomy- may have obstructed effective action to curb the advancing epidemia of chronic diseases.

For example, the prevailing approach of measuring child under nutrition on the basis of the underweight indicator (weight- for-age) can lead to gross underestimation of the presence of obesity in populations that have a high prevalence of stunting. Use of this indicator could lead aid programmes to feed apparently underweight people, with the undesirable outcome of further aggravating obesity. In Latin America, close to 90 million people are beneficiaries of food programmes (34) but that group actually comprises only 10 million truly underweight people (after correcting for height). The two facets of nutrition-related problems need to be brought together and treated in the context of the whole spectrum of malnutrition.

An integrated approach to diet-related and nutrition-related diseases The root causes of malnutrition include poverty and inequity. Eliminating these causes requires political and social action of which nutritional programmes can be only one aspect. Sufficient, safe and varied food supplies not only prevent malnutrition but also reduce the risk of chronic diseases. It is well known that nutritional deficiency increases the risk of common infectious diseases, notably those of childhood, and vice versa (35, 36). There is, therefore, complementarity in terms of public health approaches and public policy priorities, between policies and programmes designed to prevent chronic diseases and those designed to prevent other diet-related and nutrition-related diseases. A range of integrated policies and programmes most effectively lifts the double burden of disease.

Such an integrated approach is the key to action in countries where modest public health budgets will inevitably remain mostly devoted to prevention of deficiency and infection. Indeed, there is no country, however privileged, in which combating deficiency and infection are no longer public health priorities. High-income countries accustomed to programmes designed to prevent chronic diseases can amplify the effectiveness of the programmes by applying them to the prevention of nutritional deficiency and food-related infectious diseases. Guidelines designed to give equal priority to the prevention of nutritional deficiency and chronic diseases have already been established for the Latin American region (37). Recent recommendations to prevent cancer are reckoned also to reduce the risk of nutritional deficiency and food-related infectious diseases (38), and dietary guide- lines for the Brazilian population give equal priority to the prevention and control of nutritional deficiency, food-related infectious diseases, and chronic diseases (39).

1.3 Objectives

Overall objective

To determine the prevalence of malnutrition in the patients admitted to the Medical wards

Specific objectives

1. Determine the demographic details of patients admitted with malnutrition at the University Teaching Hospital Medical wards
2. Determine the gender distribution of Malnutrition in the University Teaching Hospital Medical wards
3. Determine the income levels of patients admitted with malnutrition in the medical wards
4. Determine the co-morbid pathology associated with malnutrition at the University Teaching Hospital medical wards
5. Determine the body mass index and associated pathologies among malnourished patients admitted to the University Teaching Hospital Medical wards

1.4 ETHICAL CONSIDERATIONS

Ethical approval was sought and granted from the Research Ethics Committee of the University of Zambia. Informed and signed consents were obtained from the subjects. Merits and demerits of participating in the research were explained to the subjects.

CHAPTER TWO

METHODOLOGY

STUDY DESIGN

A prospective cross sectional study involving two hundred and eighty eight patients was carried out over a period of 6 months.

STUDY SETTING

The study patients were recruited at the University Teaching Hospital (UTH) from three sites namely the medical admission ward (MAW), medical wards and the general clinic.

STUDY POPULATION

Included in the study were patients 16 to 55 years of age. Patients with malnutrition outside the age group were excluded because there is a natural decrease in the lean body mass as people get older than 55 and this would have been a natural bias for the study. The patients were to be first time admissions willing to undergo an anonymous unlinked HIV testing with an option of knowing results. Pre-test and post test counseling services as offered in the hospital were made available to all clients. All eligible patients were to be ambulant for the ease of taking height and weight and the patients were randomly selected. Those to participate in the study signed a consent form. Patients who declined to take part in the study were also excluded. Only patients admitted for the first time were considered for the study as it is a well-known fact that hospitalization can lead to malnutrition.

Patients excluded were those that were critical, not ambulant, previously hospitalized in the last one year, paraplegics or hemiplegics, confused patients, pregnant women, prisoners and those with fluid retaining conditions such as renal failure, nephrotic syndrome and congestive cardiac failure.

SAMPLE SIZE

Sample size was conveniently chosen. The sample size was 288 patients and an HIV test was done on all the patients.

METHODS

The patients fitting the criteria were subjected to a basic clinical examination. The history was taken and patient examined. Counselling was done for retroviral disease. A number of tests were done depending on the underlying disease including an HIV test. All the patients had the weight and height taken and therefore the body mass index determined. The important details obtained were age and sex, income levels, final diagnosis, triceps skin fold and a detailed diet history prior to the morbid event. The laboratory parameters were done as appropriate and there was no uniformity as patients had a plethora of pathology.

Although this was a one-point study, the patients were reviewed on a daily basis to determine the outcome of their therapy and determine the mean hospital stay.

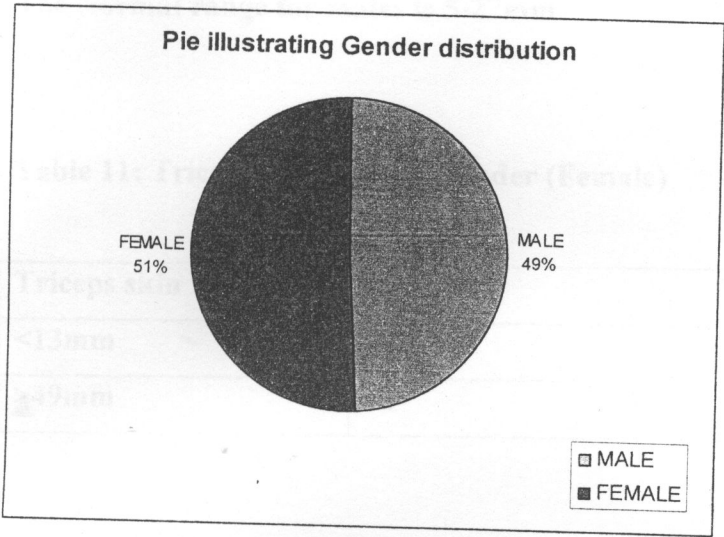
DATA ANALYSIS

The data was analyzed using the EPI INFO 6 program. A statistician was hired for this purpose. Tables were used to present the findings.

CHAPTER 3: RESULTS

All the 288 patients had their results analyzed and the following are the details.

Figure 1: Gender Distribution



The male to female ratio was almost 1:1

Table 1: INCOME LEVELS

INCOME (Kwacha)	FREQ	%FREQ
< 200,000	142	52.3
200,000-500,000	71	26.1
500,000-1000,000	38	14
Above 1000,000	20	7.3

Majority of the patients had income less than K200, 000 per month

Table 10: Triceps skin fold by Gender (Male)

Triceps skin fold	Freq	Percentage
<5mm	139	95%
>25mm	8	5%

The Normal range for males is 5-27mm

Table 11: Triceps skin fold by Gender (Female)

Triceps skin fold	Freq	Percentage
<13mm	129	91%
>49mm	12	9%

The normal range for women is 13-49mm

Table 12: HIV results

HIV Result	Frequency	Percentage
Positive	187	65
Negative	101	35

Most of the patients had HIV infection

CHAPTER 4: DISCUSSION

This study was conducted at the University Teaching Hospital to find out the prevalence of malnutrition among adults admitted to the Medical wards.

During this study which was conducted over a period of six months, it has been demonstrated that majority of the patients presenting to the University Teaching Hospital Medical wards between the ages of 16 and 55 are malnourished and present with a plethora of pathologies which may be the primary cause or consequence of malnutrition. There is no difference in gender in the numbers admitted. Malnutrition in previous studies (40,41) was shown to increase the duration of Hospital stay and to be associated with higher rates of major and minor complications (42), increased medical consultations (43), higher mortality (40) and higher hospital costs (41,44).

Thus malnutrition is associated with poor outcome. Under nutrition is associated with increased morbidity and mortality. It is common in patients admitted to hospital, and hospitalization frequently results in further nutritional depletion.

Review of work done elsewhere indicates that significant improvements in nutritional status and reductions in case fatality occurred when protein calorie supplements were routinely given to adults in several clinical situations.

Malnutrition is a common and under-recognised problem in hospital patients (45,46). Furthermore illness and hospitalization are frequently associated with negative energy balance and further deterioration in nutritional status (47). A recent survey of admissions to a general hospital reported a prevalence of malnutrition of 27% to 46% across various hospital specialties (47). There is a strong association between under nutrition and impaired immune function, increased sepsis, impaired wound healing, impaired muscle function and strength, and increased mortality (48).

During the past decade, rapid expansion in a number of relevant scientific fields and, in particular, in the amount of population-based epidemiological evidence has helped to clarify the role of diet in preventing and controlling morbidity and premature mortality resulting from non communicable diseases. Some of the specific dietary components that increase the probability of occurrence of these diseases in individuals, and interventions to modify their impact, have also been identified. Furthermore, rapid changes in diets and lifestyles that have occurred with industrialization, urbanization, economic development and market globalization, have accelerated over the past decade. This is having a significant impact on the health and nutritional status of populations, particularly in developing countries and in countries in transition. While standards of living have improved, food availability has expanded and become more diversified, and access to services has increased, there have also been significant negative consequences in terms of inappropriate dietary patterns, decreased physical activities and increased tobacco use, and a corresponding increase in diet-related chronic diseases, especially among poor people. Food and food products have become commodities produced and traded in a market that has expanded from an essentially local base to an increasingly global one. Changes in the world food economy are reflected in shifting dietary patterns, for example, increased consumption of energy-dense diets high in fat, particularly saturated fat, and low in unrefined carbohydrates. In this study, there was a diversity of foods taken though the predominant one was that of Nshima with vegetables. Almost all the patients reported consumption of high fat diet including eggs. These patterns are combined with a decline in energy expenditure that is associated with a sedentary lifestyle --- motorized transport, labour-saving devices in the home, the phasing out of physically demanding manual tasks in the workplace, and leisure time that is preponderantly devoted to physically undemanding pastimes. Given the rapidity, with which traditional diets and lifestyles are changing in many developing countries, it is not surprising that food insecurity and under nutrition persisting the same countries where chronic diseases are emerging as a major epidemic. The epidemic of obesity, with its attendant co morbidities --- heart disease, hypertension, stroke, and diabetes --- is not a problem limited to industrialized countries (32).

Children are in a similar situation; a disturbing increase in the prevalence of overweight among this group has taken place over the past 20 years in developing countries as diverse as India, Mexico, Nigeria and Tunisia (33). The increasing prevalence of obesity in developing countries also indicates that physical inactivity is an increasing problem in those countries as well. Anecdotal evidence suggests that hypertension and diabetes mellitus are on the increase in our medical wards.

As is the case with all nutritional studies, this group exhibited that the triceps skin fold was more in women than males. Another observation was that most participants had incomes less than two hundred thousand kwacha per month. Given the dynamics of malnutrition and such low incomes, it is difficult to see how these patients would recover. As has been mentioned earlier, most of these patients had HIV infection and therefore extra demands would be required on treatment of HIV infection and associated opportunistic infections.

This study has demonstrated that malnutrition is highly prevalent in the adult medical wards and that urgent measures are needed to address this problem and it is important to realize that the solution lies beyond the boundaries of medicine.

CHAPTER 5

CONCLUDING REMARKS AND RECOMMENDATIONS

This study has shown that most patients admitted to our medical wards are malnourished. There appears to be a strong association between HIV and malnutrition as the sero-prevalence in this study population was 65%. The prevalence of HIV in the medical wards is still high as the study population recorded a sero-prevalence of 65%. There is no routine measurement of anthropometric parameters in patients admitted to our medical wards and no nutritional assessment is routinely done. Tuberculosis and diarrhea diseases are the two most common co-morbidities associated with malnutrition in our medical wards. Nutritional requirements are not part of the routine therapy prescribed by doctors and the nutrition wing of the hospital is thus poorly developed.

Majority of patients admitted to the Medical wards has low incomes and their main diet is nsima with vegetables. There is evidence that overweight/obesity is an emerging problem in our wards and therefore one should expect an increase in diseases associated with over-nutrition such as hypertension and hyperlipidemias. There is need to recognize that most of our patients are malnourished on admission by routinely measuring weight and height nutritional assessment must be introduced as part of the normal physical examination and a prescribed diet included on the drug chart. The hospital nutritional wing needs to be strengthened and should actively counsel patients on diet. Patients with tuberculosis and diarrhea diseases must have nutritional supplementation. The major weakness of this study has been that I did not evaluate the serum levels of proteins, vitamins and indeed haemoglobin levels. There is need to conduct a more comprehensive study once funds are available.

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CLINICAL NUTRITIONAL STUDY ON THE PREVALENCE OF MULNUTRITION
AT U.T.H MEDICAL WARDS, LUSAKA

PATIENT NO

IDENTIFICATION

1. Age

2. Gender

a. Male

b. Female

3. Race _____

4. Marital status

a. Single

b. Married

c. Widow

d. Divorced

5. Education

a. None

b. Primary

12. Smoking

a. Yes

b. No

13. Quantity per day

ECONOMIC HISTORY

14. Occupation _____

15. Income in Kwacha/month

a. Less than K 200,000

b. Between K 200,000 and K 500,000

c. Between K 500,000 and K 1,000,000

d. Above K 1,000,000

RELIGION

16. _____

NUTRITIONAL (DIETARY) HISTORY

17. Composition _____

18. Frequency of meals/day

- a. Breakfast ☐
- b. Lunch ☐
- c. Supper ☐
- d. Other _____

19. Dietary restriction

- a. Yes ☐
- b. No ☐

If yes specify _____

COMORBID ILLNESS

20. _____

21. Duration of illness _____

PHYSICAL EXAMINATION

1. General Appearance

- a. Wasted ☐
- b. Normal ☐

c. Obese

☐

2. Hair changes

a. Yes

☐

b. No

☐

If yes specify type

a. Silky

☐

b. Sparse

☐

c. Normal

☐

3. Dermatitis

a. Yes

☐

b. No

☐

If yes specify type _____

4. Oral thrush

a. Yes

☐

b. No

☐

5. Pallor

a. Yes

☐

b. No

☐

6. Oedema

a. Yes ☐

b. No ☐

Location of Oedema _____

7. Wasting of the shoulder (with loose skin)

a. Yes ☐

b. No ☐

8. Wasting of buttocks (with loose skin)

a. Yes ☐

b. No ☐

9. Is the outline of the ribs easily seen

a. Yes ☐

b. No ☐

ANTHROPOMETRIC MEASUREMENTS-

1. Weight kg

2. Height meters

- 3. BMI
- 4. Triceps skin fold mm
- 5. Mid-arm circumference cm
- 6. Skin thickness under scapular blade mm
- 7. Skin thickness on superior iliac region mm
- 8. Lean body mass _____

APPENDIX 2
CONSENT FORM

I, _____ of _____ give consent to participate in the study entitled ‘Prevalence of Malnutrition in adult medical wards’. The study purpose and implications of the study have been explained to me.

I agree to submit blood for HIV testing and the results obtained will be confidential.

I have a right to withdraw from the study anytime without having my medical care being compromised.

Signature of participant : _____

Signature of Principal Investigator : _____

Date : _____

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