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**DETERMINANTS OF DIETARY FIBRE INTAKE AMONGST
THE DIABETIC PATIENTS AT KENYATTA NATIONAL
HOSPITAL, KENYA**

BY

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**A thesis submitted in partial fulfillment of the requirements for the Award of the
degree of Master of Public Health in the School of Health sciences of Kenyatta
University.**

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*Determinants of
dietary fibre intake*



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DECLARATION

This thesis is my original work and has not been presented for any degree or award in any other University.

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DEDICATION

To my mother, Mrs. Muthoni Mbugua for her continuous motherly love, my daughter Lisa and my brothers Simon, Peter and Anthony for their continuous encouragement, love and support.

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ACRONYMS

A.D.A:	American Diabetes Association
I.D.F:	International Diabetes Federation
I.D.D.M	Insulin Dependant Diabetes Mellitus
K.D.A:	Kenya Diabetes Association
N.I.D.D.M:	Non-Insulin Dependant Diabetes Mellitus
W.H.O:	World Health Organization
B.M.I:	Body Mass Index

OPERATIONAL DEFINITIONS

A High Fibre Diet:	A diet rich in vegetables, whole grain cereals and fruits.
Diet:	A meal taken by an individual at a given point in time.
Compliance:	Adherence to an expected or recommended diet by the patient.
Cost:	A given amount of money attached to a food item.
Cultural practices & beliefs:	Food taboos and people's way of life.
Patient's attitude:	One's belief in a food or disbelief affecting its intake.

ABSTRACT

Diabetes, particularly type 2, is reaching epidemic proportions throughout the world as more cultures adopt Western dietary habits. Diet being a major treatment for diabetes, the role played by fibre has become the subject of increased public health attention in recent years. This has come with the realization that high fibre diets are more suitable in the management of diabetes mellitus. While there is no cure for diabetes, it is controllable. If it is not treated correctly, however, it can lead to complications, such as damage to blood vessels, which in turn affect key body organs such as: the eyesight, kidneys, legs and the circulation of blood to the heart leading to stroke and heart attack. Immediate action is needed to stem the tide of diabetes and to introduce an effective treatment strategy to reverse this trend. The study sought to establish determinants of dietary fibre intake among the diabetic patients at Kenyatta national hospital. A descriptive cross sectional study was carried out amongst one hundred and forty diabetic patients seeking treatment at the hospital. Kenyatta national hospital was purposively sampled since it is a public referral hospital that serves patients from all over the country thus expected to have patients from diverse regions and diverse feeding habits. Availability sampling was used to select the sample subjects. Data was collected by use of a structured interview and review of patients records. Quantitative data was analyzed using Social Package for Social sciences (SPSS) software while, qualitative data was described and used to illustrate the main ideas. The findings of the study indicated that 78.6% of the patients had a high level of knowledge on what dietary fibre is and 74% of the patients were aware that it is important for diabetics to eat dietary fibre. Knowledge on what is diabetes and the importance of dietary fibre were highly significant to patients' educational level at ($\chi^2=31.469$, $df=9$, $p<0.05$) and ($\chi^2=19.193$, $df=9$, $p<0.05$) respectively. Cost also influenced intake of certain foods positively while in others it did so negatively hence, there was a significant relationship between intake of certain food and cost. Unpolished flour intake was positively affected by cost ($\chi^2=34.385$, $df=12$, $p<0.05$). Apple fruit ($\chi^2=89.510$, $df=12$, $p<0.05$) and brown rice ($\chi^2=71.575$, $df=12$, $p<0.05$) intake were negatively affected by cost as only those spending above Ksh.150 could afford it on daily basis. Patients' attitude towards dietary fibre was positive as 57.9% believed that it was helpful in management of diabetes while 77.9% believed that it helped in controlling blood sugar. However, cultural influence was attributed to only 10% of dietary fibre intake. The study recommends that foods high in dietary fibre should be waived off taxes to make them more affordable to diabetics. There is also need to encourage these patients to consume more vegetables, cereals and fruits as they are rich in dietary fibre.

CHAPTER ONE

INTRODUCTION

1.1 Background information

Diabetes mellitus is a metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both (WHO, 1999). It is an ancient disease and the name comes from the Greek words diabetes, meaning 'to flow through a siphon' and mellitus, meaning 'honeyed' which was added many centuries later to describe the sweet taste of the urine (Krause and Mahan, 1984). In reality, this term includes two diseases whose common characteristic is an elevated level of sugar in the blood (George *et al.*, 2003). There are two types of diabetes mellitus: type 1 and type 2.

Type 1 diabetes mellitus, also called juvenile diabetes or insulin-dependent diabetes mellitus (IDDM) accounts for 5% to 10% of individuals with diabetes. IDDM is commonly diagnosed in children and young adults. It is considered an autoimmune disease because the pancreatic beta cells are destroyed by the immune system and the pancreas produces little or no insulin. The individual with type 1 diabetes mellitus is dependent on exogenous insulin to maintain life and keep the blood glucose in control (Robert *et al.*, 2000).

Type 2 diabetes mellitus, also called non-insulin-dependent diabetes mellitus (NIDDM) or adult onset diabetes, accounts for 90% to 95% of individuals with diabetes. The onset is typically after 40 years of age. Heredity and obesity appear to be significant factors in its etiology. This type of diabetes is often managed with diet and lifestyle changes, but drug therapy such as oral hypoglycemic agents or insulin may be necessary (Robert *et al.*, 2000). Gestational diabetes exists in women who develop glucose intolerance during pregnancy, usually between the twenty-four and twenty-eighth week of pregnancy (WHO, 1999).

The causes of both types of diabetes are unknown, but current evidence suggests that IDDM is a heterogeneous disorder that in most cases results from a virally initiated autoimmune destruction of beta cells of the pancreas (Krause and Mahan, 1984). NIDDM is probably also heterogeneous, is genetically determined, and is expressed with age or the influence of other factors such as obesity, diet and inactivity (Awan *et al.*, 1976). Impaired insulin secretion (beta cell defect), tissue insensitivity to insulin and abnormal hepatic glucose metabolism are considered factors in the different types of NIDDM (WHO, 1985). The heterogeneity of diabetes makes a trio approach to its management necessary, that is; medication, diet and exercise.

It is estimated that around 194 million people have diabetes in the adult population in the world. The European Region and the Western Pacific Region

have the highest number of people with diabetes, approximately 48 and 43 million respectively.

In Africa, it was estimated there were 7.5 million diabetic cases by the year 2000. This figure is expected to rise to about 18.2 million by 2030. Nevertheless, 80% of people with diabetes mellitus in Africa still remain undiagnosed (WHO, 2004).

In Kenya, the prevalence rate of diabetes is estimated at 3-10 % (K.D.A., 2004). Out of this number, 15% are people below 30 years who need prompt education to avoid complications that affect the vital organs of the body. The prevalence is likely to go higher since most type 2 patients are diagnosed many years after onset (Njenga, 2005).

1.1.1 Management of diabetes mellitus

1.1.1.1 Exercise

Exercise plays an important role in controlling diabetes because it lowers blood sugar and helps insulin to work more efficiently in the body. It also promotes weight loss and lowers blood pressure. People with type2 diabetes who exercise regularly have been shown to lose weight and gain better control over their blood pressure, thereby reducing the risk for cardiovascular disease (Anderson, 1985).

1.1.1.2 Oral medication and insulin

Oral diabetes medicines, or oral hypoglycemics, can lower blood glucose in people who have diabetes. These medications are more effective in people who developed diabetes after age 40, have had diabetes for less than 5 years, are normal weight, and have never received insulin or have taken only 40 units or less.

Like oral diabetes medication, insulin is an alternative for some people with NIDDM who cannot control their blood glucose levels with diet and exercise (WHO, 1999). In special situations, such as surgery and pregnancy insulin is a temporary but important means of controlling blood glucose.

1.1.1.3 Dietary fibre and diabetes management

A proper diet is critical to diabetes treatment (A.D.A., 1997). A diabetic patient should eat a healthy balanced diet that will meet three dietary goals which are to achieve ideal weight, maintain normal blood glucose levels and limit foods that contribute to heart disease (A.D.A., 1997). However, there is not a single diabetic diet that will suit everyone. Healthy eating habits along with good control of blood glucose are the basic goals in managing this complex disease.

Dietary fibre is recommended for diabetics (A.D.A, 1997). Particularly important is soluble fibre, found mainly in fruits, vegetables and some seeds. They prevent

complications that come along with uncontrolled diabetes. Soluble fibre includes pectins, gums, and mucilages, which act to increase the viscosity of food in the intestines thus slowing or reducing the absorption of glucose into the blood stream. Besides keeping blood glucose in good control and lowering serum triglycerides, high fibre diet provides vitamins and minerals in trace amounts (Anderson, 1985). In this respect, any diet featuring large quantities of raw or lightly processed vegetables is beneficial (Crawford *et al.*, 1995).

Access to high fibre diet appears to be limited by certain factors e.g. cost, cultural practices and patient's knowledge and attitude. It takes the patients active, intentional and responsible process of self-care, in which the patient works to maintain his or her health in close collaboration with healthcare staff (Kyngas *et al.*, 1996). The patient may be just following the orders of healthcare professionals. Different communities eat different meals due to various reasons like religion, availability and physiological needs. Thus an individual tends to eat what is culturally acceptable.

1.2 Statement of the problem

One of the leading causes for hospitalization for ketoacidosis among the diabetics is non-compliance with diet therapy. It contributes to an increased health care expenditure and inefficient implementation of dietary regimens. A diabetic patient is unable to utilize properly the sugar produced from the food he/she eats due to a complete lack of insulin or less insulin production by the body. Therefore, one

needs a calorie-controlled diet which helps to control blood sugar. It also improves the overall health thus preventing diabetic complications like heart disease, hypertension and some cancers. In addition, it is important to maintain the total energy of the diet to avoid loss of weight (WHO, 2004). Dietetic management is constantly overcoming the old taboos concerning the drawbacks of carbohydrates. Compared to fats and proteins, carbohydrates have the greatest impact on blood sugar (Bjork and Elmstahl, 2003). In all cases, complex carbohydrates found in whole grains and vegetables are preferred over those found in starch-heavy foods. They are the main source of dietary fibre. They aren't easily digested and hence cause a lower and slower increase in blood sugar. However, cost, patients' knowledge and attitude as well as cultural beliefs and practices may possibly influence the intake of a dietary fibre. This study therefore sought to investigate if these factors influence the intake of a dietary fibre among the diabetic patients at Kenyatta National Hospital.

1.3 Research questions

The major research questions that the study intended to answer were:

1. What are the patterns of dietary fibre intake by the patients?
2. How does the cost of foods high in dietary fibre influence its intake?
3. How does patient knowledge and attitude influence dietary fibre consumption?
4. How do cultural beliefs and practices affect dietary fibre intake?

5. What are the levels of key parameters (blood sugar and weight) for the patients with variable compliance?

1.4 Null Hypothesis

Cost, knowledge, attitude and cultural beliefs and practices do not influence the intake of dietary fibre.

1.5 Objectives of the study

1.5.1 General objective

To establish determinants of dietary fibre intake among diabetic patients at Kenyatta National Hospital.

1.5.2 Specific objectives

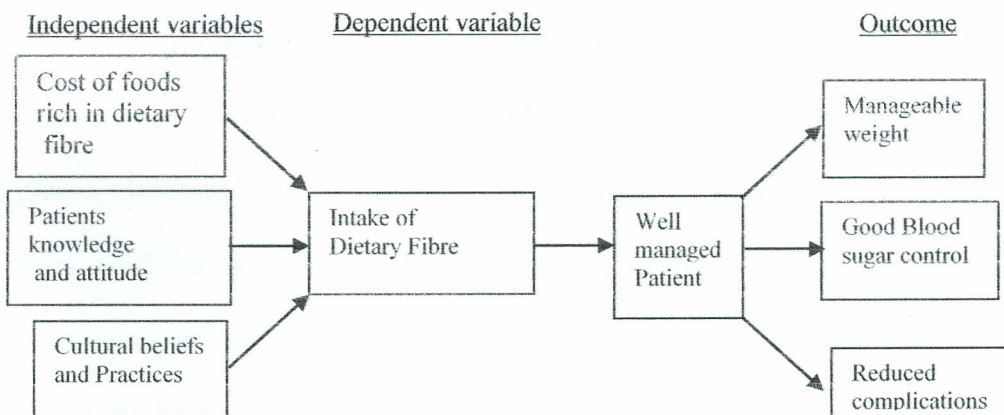
1. To establish the patterns of dietary fibre intake by diabetic patients.
2. To investigate how cost influences dietary fibre intake by diabetic patients.
- 3 To determine how patient's knowledge and attitude affect the intake of dietary fibre.
4. To determine how cultural beliefs and practices influence the intake of a dietary fibre.
5. To find out the levels of the key parameters (blood sugar and weight) for the patients with variable compliances.

1.6 Significance of the study

Effective diabetes management which involves regimen compliance not only reduces complications, but also is also associated with an improved quality of life for all diabetics. Dietary fibre consumption is very important for diabetics as it helps in preventing complications that come along with uncontrolled diabetes. However, its access appears to be limited by certain factors like cost, knowledge, attitude and cultural practices. It was in view of this that the study was carried out. The results of the study will be used by policy-makers, nutritionists and other relevant authorities in managing the diabetic patients in order to reduce it's complications.

1.7 Conceptual Framework

Intake of foods rich in dietary fibre is dependent on cost, patient knowledge, attitude and cultural beliefs and practices.



CHAPTER TWO

LITERATURE REVIEW

2.1 Diabetes mellitus

Diabetes Mellitus is a group of metabolic diseases characterized by high blood sugar levels, which result from defects in insulin secretion or action or both (WHO, 1999). Food is the main source of sugars in our bodies thus, when one is diabetic, it is necessary to make adjustments on types of foods, quantities to be taken and how to combine certain foods to ensure good sugar controls. Diet sufficient in fibre is very important. It helps to control blood sugar, blood cholesterol and weight. One should eat vegetables daily, take lots of pulses and cereals but cut down on fats, oils, sugar and red meat.

2.2 Dietary fibre

Fibre is an important component of many complex carbohydrates (A.D.A, 1994). Dietary fibre is usually found only in plants, particularly vegetables, fruits, whole grains, nuts, and legumes (beans and peas). One exception is chitosan, fibre made from shellfish skeletons. Fibre can not be digested but passes through the intestines, drawing water with it and is eliminated as part of faecal content. Whole grains are very high in fibre, especially insoluble fibre. Certain grains, like oats and barley, are also high in soluble fibre. Since both types of fibre are helpful for

people with diabetes, a good mix of whole grains is recommended (Alexander *et al.*, 1999).

2.3 Role of dietary fibre

A study carried out by Bjorck (2003) suggested that a low-glycaemic index diet has a therapeutic as well as a preventive potential in relation to the insulin resistance syndrome. He implemented a low-glycaemic diet that required an extended list of low-glycaemic foods on 503 subjects and followed up for a period of 6 years. The results of the study were in accordance with epidemiological evidence of a reduced risk of type 2 diabetes with a low-glycaemic diet rich in cereal fibre. He concluded that low-glycaemic cereal foods developed should preferably be rich in dietary fibre.

A complications study by Taylor (1983) in a clinical based epidemiological project including 3250 individuals with type 1 diabetes analyzed the natural dietary fibre intakes associated with decrease in plasma oestradiol and oestrone levels, a protective effect of total fibre intakes against cardiovascular disease. He concluded that soluble fibre in dried beans and potatoes has important benefits for the heart, particularly for achieving healthy cholesterol levels and possibly benefiting blood pressure as well.

In another study carried out by Riccard *et al.* (2000) on dietary treatment of the metabolic syndrome he recommended a high fibre diet for the best management

of diabetes coupled with limited intake of saturated fats in order to maintain desirable weight since weight reduction is a powerful measure for the treatment of metabolic syndrome. Insoluble fibre (found in wheat bran, whole grains, seeds, nuts, and fruit and vegetables) may help achieve weight loss since weight reduction is a powerful measure for the treatment of the metabolic syndrome.

Studies suggest that fibre being an important component of many complex carbohydrates, diets that are rich in fibre reduce the risk of type 2 diabetes (A.D.A, 1994). In one of the most recent studies, which appeared in the February 2004 issue of *Diabetes Care*, researchers who analyzed data on 2,834 participants in the Framingham Offspring Study, found that the prevalence of both insulin resistance and the metabolic syndrome was significantly lower among those eating the most cereal fibre from whole grains compared to those eating the least. Prevalence of the metabolic syndrome was 38% lower among those with the highest intake of fibre from whole grains. Conversely, study subjects whose diets had the highest glycemic index and glycemic load, both of which are typically low in whole foods and high in processed refined foods, were 141% more likely to have the metabolic syndrome compared to those whose diets had the lowest glycemic index and glycemic load. In other words, compared to those whose diets were primarily composed of high fibre foods: whole grains, legumes, vegetables and fruits.

Diet and exercise are the cornerstones of treatment for persons with type2 diabetes mellitus, yet patients find these areas of self-management to be the most difficult (Liu *et al.*, 2000). This is influenced by factors such as:

a) Cost: Focus group discussions by Vijan (2005) on barriers to following dietary recommendations in type 2 diabetes on 446 patients with diabetes, the most commonly identified barrier was cost. Moderate diet was seen as a greater burden than oral agents. He therefore concluded that, barriers to adherence to dietary therapies are numerous but some such as cost and in the urban setting are potentially remediable. Adding that interventions aimed at improving patient's ability to modify their diet need to specifically address areas like cost of diet.

A study carried out by Sakwa's (1996) on factors that influence non-compliance to prescribed diabetes regimens in the management of diabetes mellitus at Kenyatta National Hospital, 60 patients were interviewed on the relationship between compliance to regimens and cost. 65% of those who complied felt that the foods were not costly while the rest 35% non-compliers felt that the foods were costly. She therefore concluded that cost could be a barrier to compliance especially to low-income earners she based this on the fact that majority of the participants in the study were low-income earners and it explains why they found the foods too costly.

According to the 2005 Economic Survey, the overall urban inflation rate estimated using the consumer price indices, increased. This leads to an increase in

cost of production of the goods. The rise in inflation rate was more pronounced in Nairobi lower income group. Increase in petroleum products and insufficient rains are expected to spur inflation upwards (ibid). This is well reflected by the increase in prices of bread e.g. the cost of refined bread goes for Ksh. 25 while as the cost of whole-meal bread is Ksh. 48.

b) Patient's knowledge and attitude :) A cross-sectional study conducted by Cox (2004) with a sample of 457 individuals on the characteristics of low-income African-American and Caucasian adults that are important in self-management of type2 diabetes. In their study the results showed that over three-fourths of subjects had been counselled on diet and exercise, but less than half were following dietary recommendations and only one-fourth were getting adequate exercise. The findings therefore imply that self-management education for diabetics does not need different cultural orientation and that best disease control is achieved when those with diabetes have a high degree of knowledge of diabetes, positive attitude, good meal plan adherence, and few perceived barriers to physical activity.

In another study by Anderson (1985) on a comparison of views of individuals with type 2 diabetes mellitus and diabetes educators about barriers to diet and exercise, out of 97 patient with diabetes and 143 diabetic educators, the results indicated that 50% of the patients who were on meal plan and 26% on exercise plan turned up in low numbers. He therefore, concluded that patients and

educators view barriers differently and there should be enhanced Counselling and education in order to change patient's attitude and promote compliance.

In another study ADA (1996) on Beliefs, Knowledge and Perceived Norms about Diet and Diabetes with a sample of 607, the results indicated that, food composition knowledge and perceived pressure to eat a healthful diet were not significant predictors of change in fat intake fibre intake, or weight. He therefore concluded that, interventions that increase the public beliefs in diet and health association and communicate diet recommendations can encourage healthful dietary changes.

Another study carried out by Schatz (1988) concludes that the knowledge acquired by the patients about their disease condition appears to be an important factor that has a bearing upon the control the patient chooses to exert on their care. Schartz's findings also indicate that the number of years a patient has had diabetes, the patients education level and the amount of knowledge he or she has acquired all have a positive effect upon compliance. It is expected that the longer a patient has been diabetic the more compliant one will be since the person will have gained knowledge from reinforcement of the physician, other health care professionals, friends and family over time.

c) Cultural beliefs and practices: Culture dictates what people eat. People from different cultural background eat different foodstuffs for different reasons all together. Western culture is different from African culture and this explains more on the prevalence of diabetes in these two regions (A.D.A., 2000). The incidence of diabetes in seven U.S. ethnic minorities (for which there are data) is much higher than the incidence in their respective countries of origin (WHO, 2004). This indicates when these groups adopt Western eating and lifestyle practices, the incidence of NIDDM increases uniformly (ibid). This same epidemiological trend has long been recognized for cardiovascular disease and colon cancer. The U.S. diet provides the highest amount of calories for the lowest cost worldwide. It also has the highest availability of large-scale agricultural commodities, and refined and processed food products. The U.S. diet is becoming popular around the world, hence the high incidence of diabetes. Nowadays most of the African communities are turning to refined foods due to ease in access (WHO, 2002). Nevertheless, there are some few cultures which are still depending on indigenous foods that were and are abundant in our African environment (Mngola, 1979; WHO, 2002). With increase in urbanization many people abandon these foods since urbanization is usually accompanied by a change in dietary sources of starch from traditional staples such as legumes to western foods like bread and potatoes. This change may contribute towards the development of the disease and for those who have poor management.

A cross-sectional study carried out by Gilbert (1985) involving 450 subjects on the incidence of diabetes in relation to diet, he concluded that the smaller number of genetic factors currently identified with NIDDM are likely to be factors which are expressed by current western diets. Approximately 95% of diabetics who participated in his study are type 2, presenting with symptoms well into childhood. He added that the incidence of diabetes in seven U.S. ethnic minorities (for which there are data) is much higher than the incidence in their respective countries of origin. This indicates when these groups adopt Western eating and lifestyle practices, the incidence of NIDDM increases uniformly.

A retrospective study by Leigh (1997) on 315 individuals on nutrition and NIDDM from an Anthropological Perspective on the causative factors for NIDDM relate to adopting Western dietary standards based on abundant, processed agricultural foods. He recommended that: consuming foods more closely aligned with a hunter-gatherer diet can reduce obesity and provide glycaemic control in many individuals. This was due to an increase in cases of NIDDM since the results indicated that ethnic minorities adopting western diets have uniform increases with the disease.

In a survey conducted on adults aged 55 years and older on family support, diet and exercise among the Mexican Americans with type 2 diabetes, Wen (1992) he concluded that family behaviour is associated with diet and exercise self-care and that diabetes educators and healthcare providers should consider involving the

entire family in the management of older patients with type 2 diabetes. Interventions designed to improve diabetes self-management should address family support specific to diabetes, self-efficacy, and barriers to self-care. This was arrived at when the results indicated that higher levels of perceived family support and greater self-efficacy were associated with higher reported levels of diet and exercise self-care.

In another study by Boji *et al.* (1996) on Acculturation and Prevalence of Diabetes among Japanese-American men in Hawaii, he examined the association between acculturation to western lifestyle and the prevalence of diabetes among 8,006 Japanese-American men with varying degrees of exposure to traditional Japanese social and lifestyle in 1965-1968. A reduced prevalence of diabetes was observed among the men who had retained a more Japanese lifestyle. These men consumed more of complex carbohydrates. His findings thus suggested that living a Japanese lifestyle is associated with a reduced prevalence of diabetes.

2.4 Summary

There is evidence that dietary fibre is important in the management of diabetes since not all carbohydrates are equal in how quickly or slowly they raise the blood sugar. Choosing carbohydrates that have a slower effect on blood glucose may help control the surge in blood glucose that occurs after meals called postprandial hyperglycemias. However, the significance of such a diet may be influenced by its cost, cultural practices as well as patient's attitude and knowledge.

CHAPTER THREE

MATERIALS AND METHODOLOGY

3.1 The study area

The study was carried out at Kenyatta National Hospital, which is a National referral and teaching hospital. It is located in Dagoretti division Nairobi province (see appendix 11). It has a diabetic clinic which operates once a week. The clinic is open to the public and offers medical consultation as well as diet education at a fee of Ksh. 280.

3.2 The study design

A descriptive cross-sectional study was carried out. The study analyzed data collected on a group of subjects at one time rather than over a period of time. The study aimed at the collection of data in order to test the hypothesis or answer questions that the research aims to clarify.

3.3 Variables

The independent variables were: - cost, knowledge and attitude and cultural beliefs. The variables were considered in determining their influence to dietary fibre intake among the diabetic patients.

3.4 The study population

The study population comprised of all diabetic patients attending to the weekly clinic at Kenyatta National Hospital.

3.4.1 Inclusion criteria

Diabetic patients who had had diet education and were coming for the weekly review.

3.4.2 Exclusion criteria

Newly diagnosed diabetic patients who had not undergone dietary education

3.5 Sampling procedure

Kenyatta National Hospital was purposively sampled because it is a national referral that serves diabetic patients from all over the country therefore expected to have clients from diverse regions as well as different feeding habits. However, availability sampling was used to select the sample subjects attending to the weekly diabetic clinic.

3.6 Sample size determination

The total sample size was determined by the formula recommended by Mugenda & Mugenda (1999).

$$N = z^2 pqD / d^2$$

Where,

n=Sample size

Z= Standard normal deviate

P= proportion that is diabetic. The national prevalence stands at 10% by K.D.A.

(2005).

q= 1-p

D= Design effect

d= degree of accuracy

Therefore:

$$1.92^2 \times 0.1 \times 0.9 \times 1/0.05^2 = 140$$

3.7 Data collection

Primary and secondary data was used. A standardized questionnaire was administered to at least 140 patients in order to collect primary data. Questionnaires to the patients were administered by the interviewer. Records of patients seeking treatment at the clinic including, blood sugar records and weight management records were also reviewed in order to get a clearer picture on diet compliance which is well reflected by the good control of the parameters.

3.8 Ethical consideration

Prior to the study, clearance was sought from Kenyatta University Graduate School, Ministry of Education, Science and Technology and the Ethical and

Research Committee of Kenyatta National Hospital (see appendix 1a and 1b). Informed consent was also sought from the subjects and confidentiality was maintained on all information and data collected. Information obtained was used for the purpose of study.

3.9 Data quality control

Data collection instruments were pre-tested at Kikuyu Mission Hospital before the actual data collection and research assistants were trained to ensure conformity with the study. Data cleaning was also done.

3.10 Data analysis and Presentation

Data was analyzed using the statistical package for social sciences (SPSS). Percentage tables were used to summarize the demographic data. Cross-tabulation frequency tables were drawn to find out the relationship between some specific variables and adherence to diets by patients. Chi-square was computed to determine if the relationship of the dependent and independent variables actually existed e.g. cost of diet and its intake. Significance was tested at ($p \leq 0.05$). Knowledge and attitude were analyzed using descriptive statistics and Chi-square test of independence was also computed to test the association with other variables.

CHAPTER FOUR

RESULTS OF THE STUDY

4.1 Social Demographic Profile

4.1.1 Distribution of the respondents according to sex

The study was carried out in two ways i.e. interview schedule and review of patients records. In both ways, ratio of men to women was not by far very different, with the proportion of men (73) slightly higher than that of the women (67) and the ratio was the same in reviewed records i.e. 1:1 male to female ratio (Figure 1).

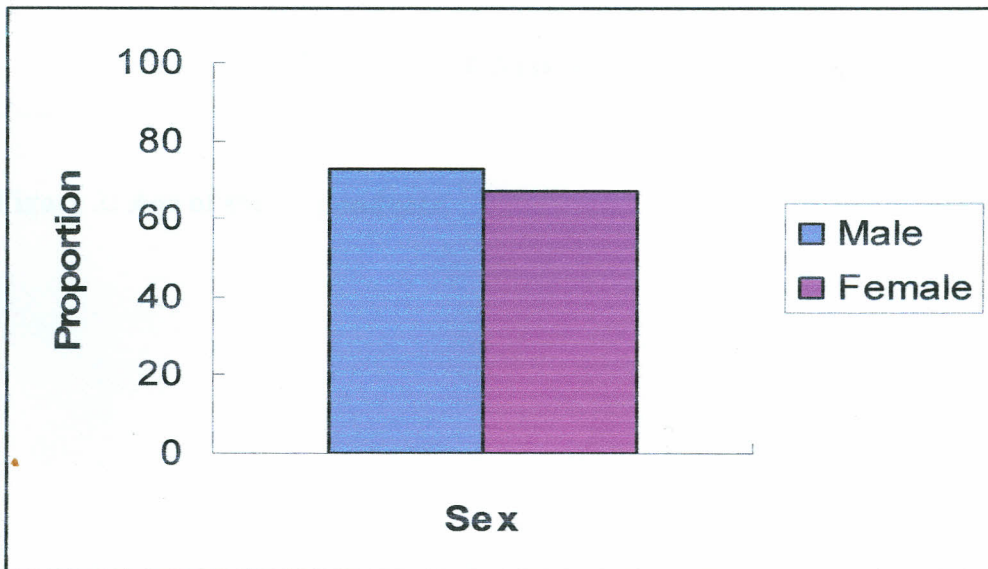


Figure 1: Sex of the respondents

4.1.2 Distribution of the respondents according to their age

Seventy one patients (50.7%) were in the age group 41-60 years with the youngest respondents being below 20 years old while, the oldest respondent was 80 Years (Figure 2).

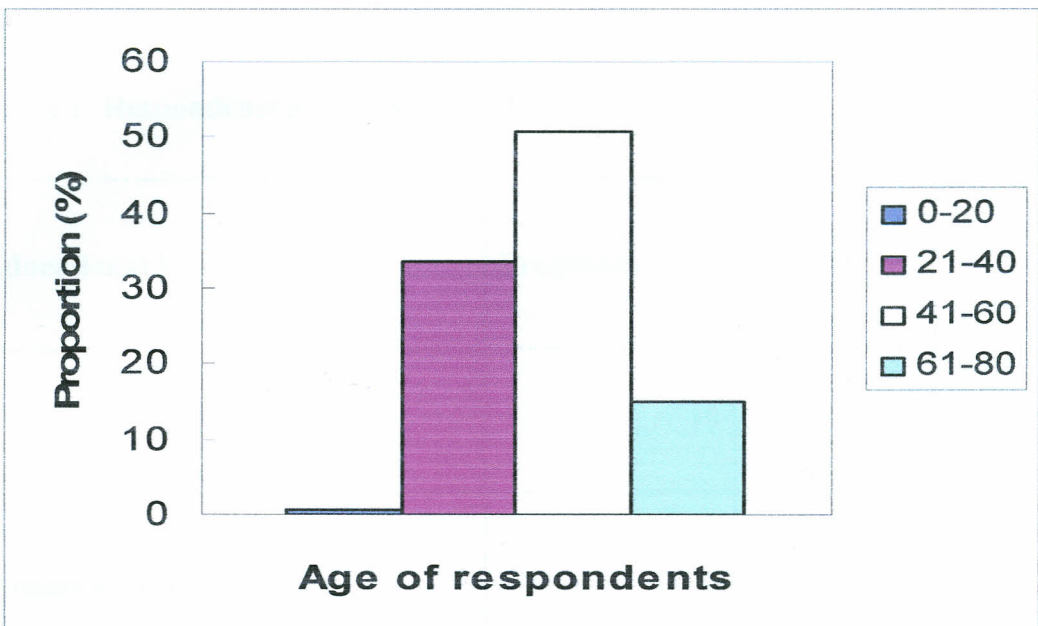


Figure 2: Age of the respondents

4.1.3 Respondents educational level

Table 1 shows that most of the respondents were of low educational level with the largest number (35.1%) having attained secondary and (34.4%) primary school education respectively. A small number (14.5%) had not had any formal education at all.

Table 1: Respondents educational level

Educational level	Frequency	Percent
Never been to school	19	14.5
Primary school	45	34.4
Secondary school	46	35.1
Tertiary	21	16.0
Total	131	100.0

4.1.4 Distribution of the respondents by ethnic groups

Cultural beliefs and practices was also an important consideration on dietary fibre Consumption, majority of the respondents were from the Kikuyu ethnic group (71.4%). The Samburu at (0.7%) and the Embu at (0.7%) were the least (Table 2).

Table 2: Respondents ethnic group

Ethnic Group	Frequency	Percent
Luo	5	3.5
Kikuyu	102	73.0
Kamba	4	2.8
Kalenjin	3	2.1
Gusii	2	1.4
Meru	8	5.7
Luhya	4	2.8
Turkana	2	1.4
Maasai	7	5.0
Samburu	1	0.7
Embu	1	0.7
Total	140	100.0

4.1.5 Respondents distribution according to amount spent on food per day

Most (63.6%) of the respondents spend between Ksh. 70-150 per day on food, while (17.9%) of them spend below Ksh. 70. Only 11.4% of the respondents spend above 300 shillings per day and the least being 7.1% spending between Ksh. 150-300 (Figure 3).

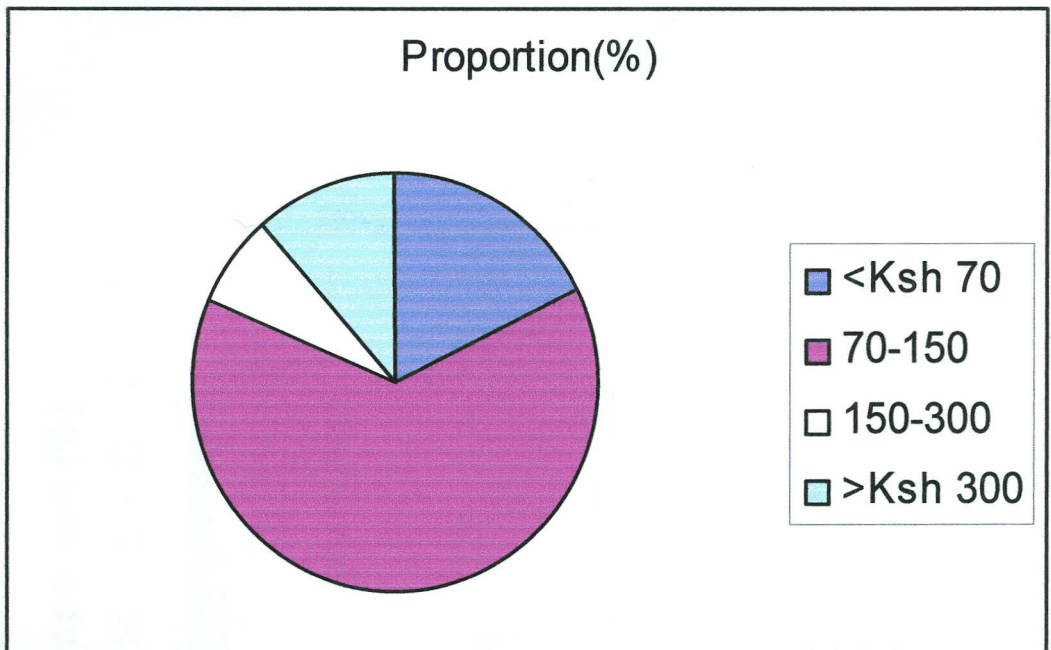


Figure 3: Amount allocated to food per day in Kenya shillings

4.2 Patterns of dietary fibre intake by diabetic patients.

4.2.1. Fruits

Banana is the most popular fruit amongst the diabetics with 42.9% of the respondents taking it daily followed by orange and passion fruits at 25.7% and 22.9% respectively. The least popular were avocado (5.7%) and apple (10%). It was found that majority preferred to eat banana on daily basis (42.9%), orange was preferred twice a week (32.1%), avocado weekly (38.6%) and apple once a month (48.6%) (Figure 4).

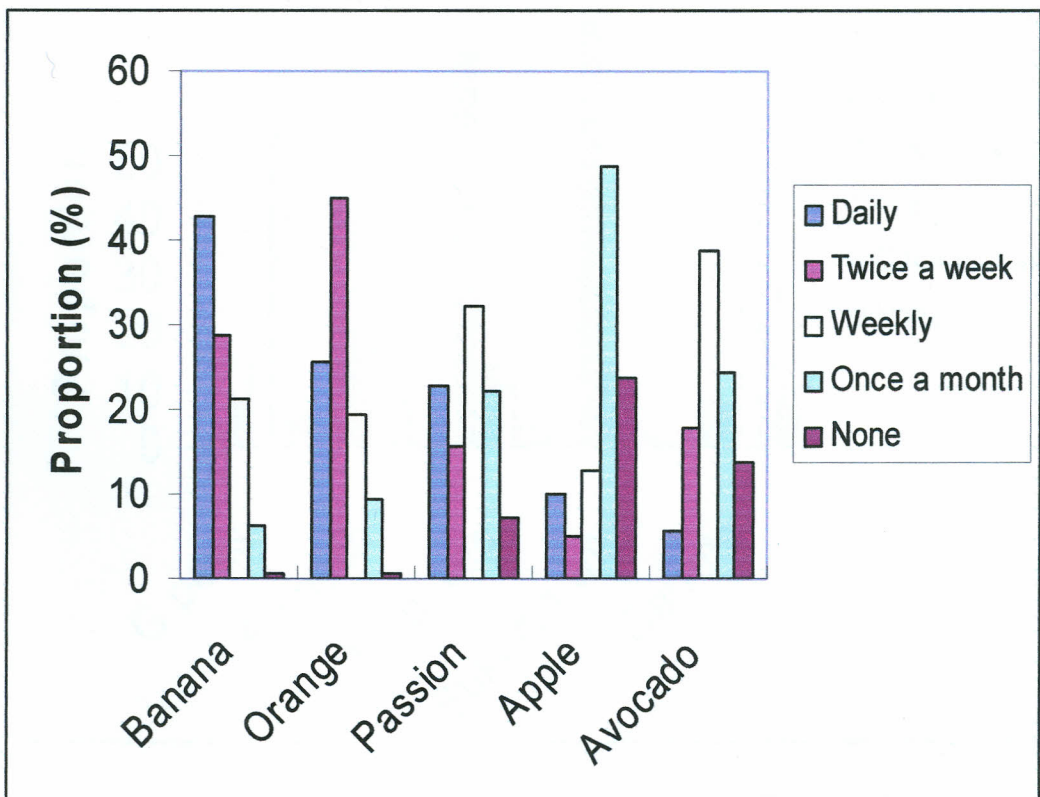


Figure 4: Patterns of fruit intake

4.2 .2 Vegetables

The most popular vegetable is the sukuma wiki (kales) taken by (74.3%) of the total respondents on daily basis followed by traditional vegetable & spinach at 69.3% and 48% of the total response taking them daily. Green peas and carrots are the least popular within 2.1% and 8.6% green peas are affected by season and carrots many believe the sweet taste will raise blood sugar levels .Sukuma wiki, traditional vegetable, and spinach are preferred daily, while carrots and green peas are taken weekly and once per month, respectively (Figure 5).

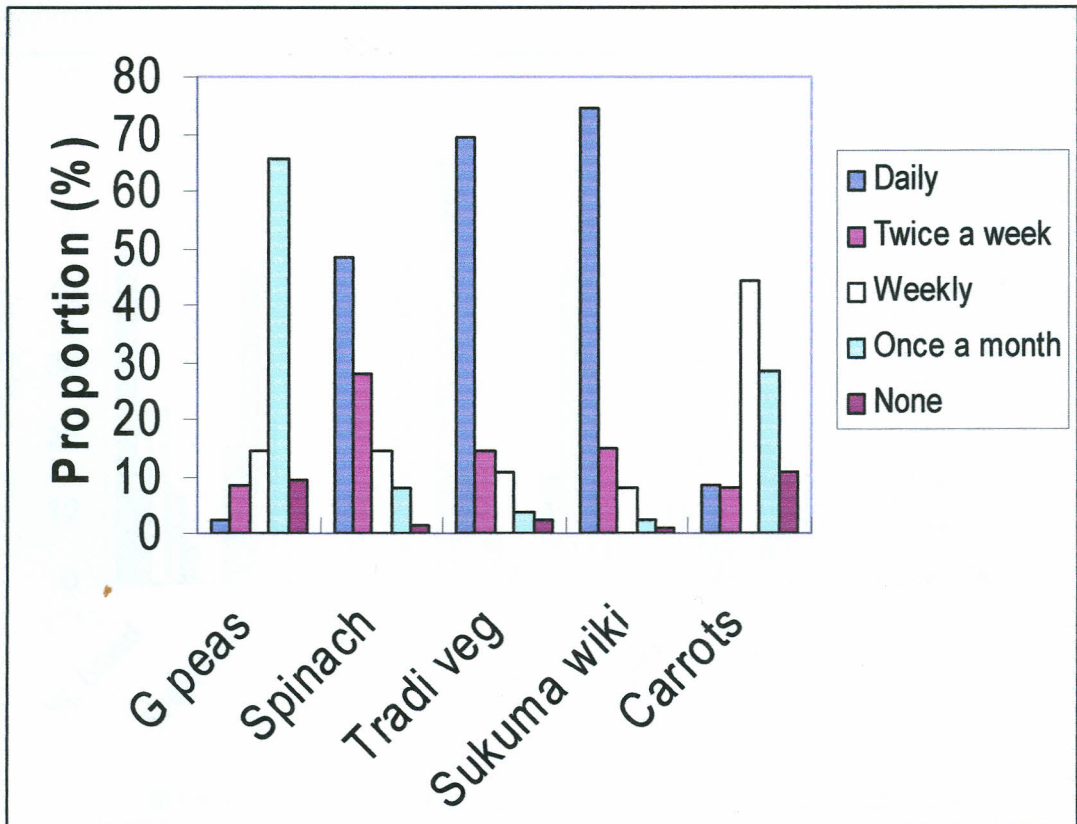


Figure 5: Patterns of vegetable intake

4.2.3 Selected Cereals and legumes

The most popular cereal was the unpolished flour (58.6%) followed by whole bread (45.7%), halize /njahi (27.1%), millet flour (19.3%), beans (2.9%), dry peas (1.4%), brown rice (1.4%) and lentils (0%) being the least popular. However, unpolished flour and whole bread were preferred on daily basis, beans (54.3%) and millet flour (43.6%) were preferred twice a week. Dry peas (53.6%) and cow peas (46.4%) were preferred weekly. Halize /Njahi (39.3%) were preferred once a month while brown rice was not consumed (Figure 6).

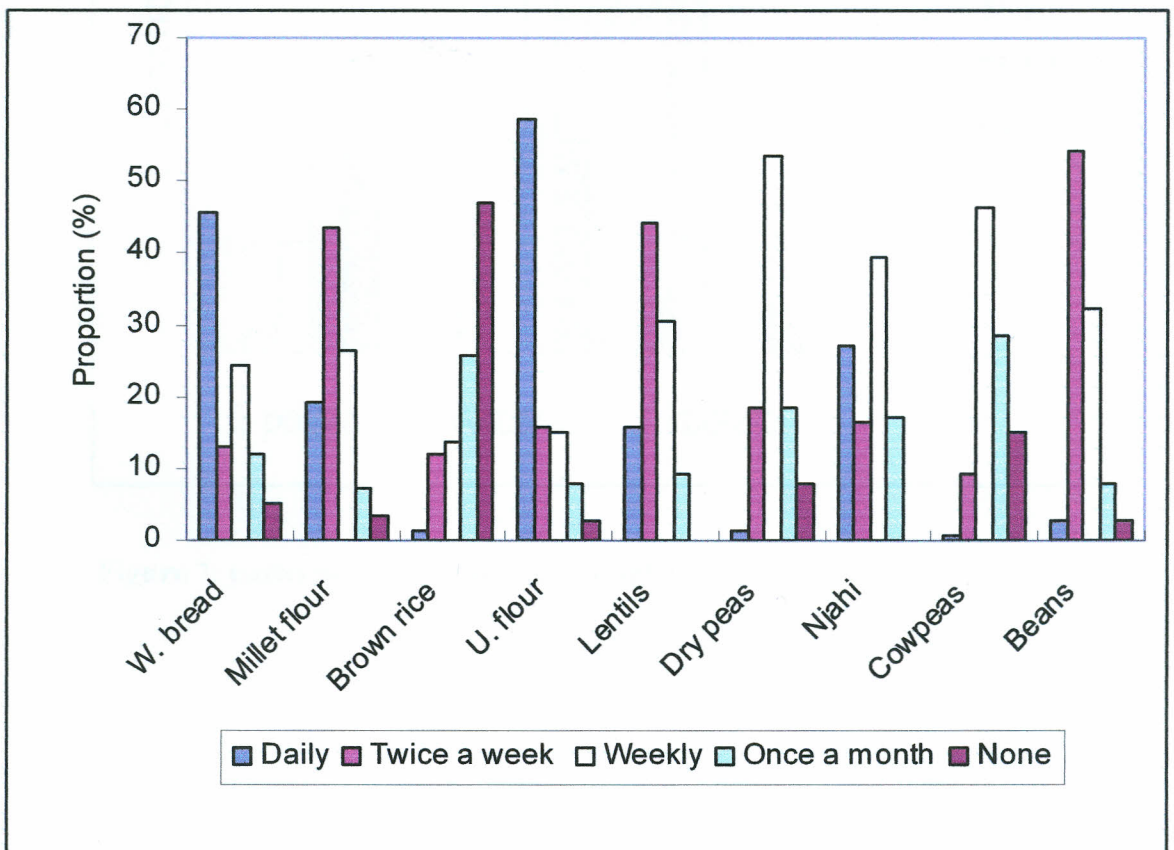


Figure 6: Patterns of selected cereals and legumes intake

4.2.4 Roots and tubers

The most popular was the irish potato with 5.7% of the respondents taking it daily followed by arrow roots (1.4%) and sweet potato (1.4%) respectively. The irish potato was more preferred twice a week (47.1%). Sweet potato (52.1%) and arrow roots (59.3%) were consumed once a month (Figure7).

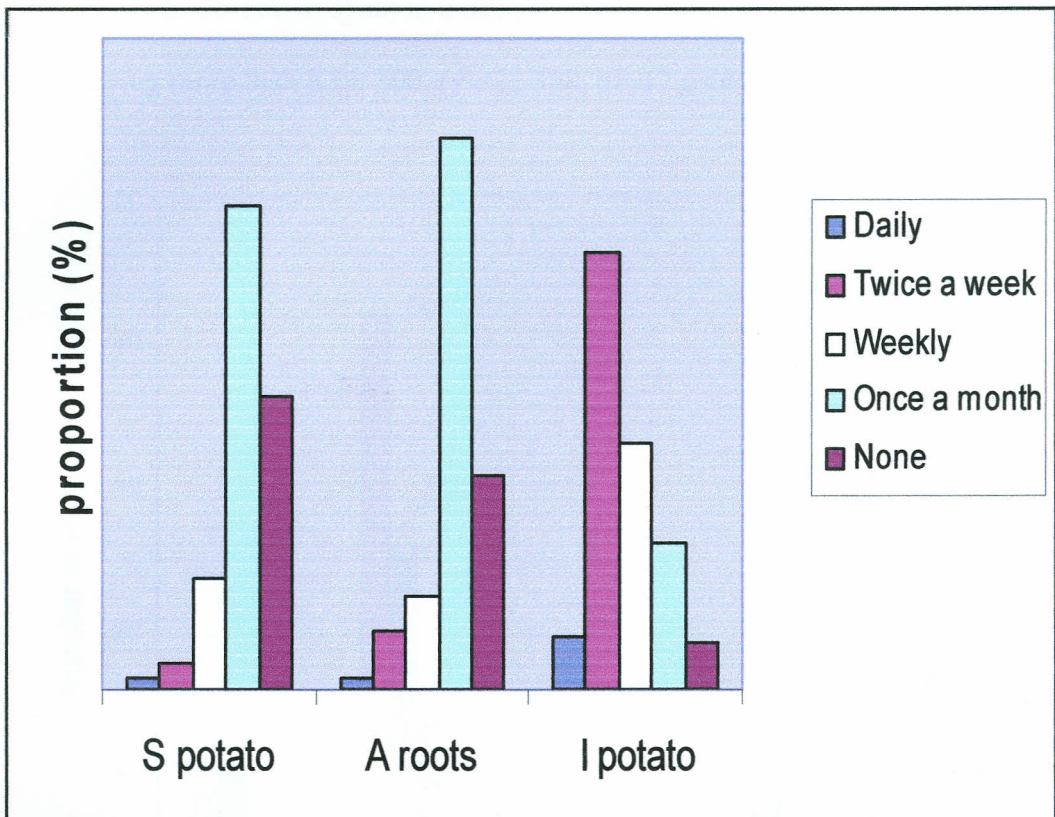


Figure 7: patterns of roots and tube intake

4.3 Relationship between cost and intake of certain foods

4.3.1 Banana intake and amount spent on food per day

Figure 8 shows the results on banana intake and amount spent on food per day. It indicates that there. There is a significant relationship between the amount spent on food per day and the intake of banana. This is evident by the fact that those who have Ksh. 70-150 to spent in a day prefer taking banana on daily basis than those having more than Ksh. 300. ($\chi^2=22.308$, $df=12$, $p<0.05$)

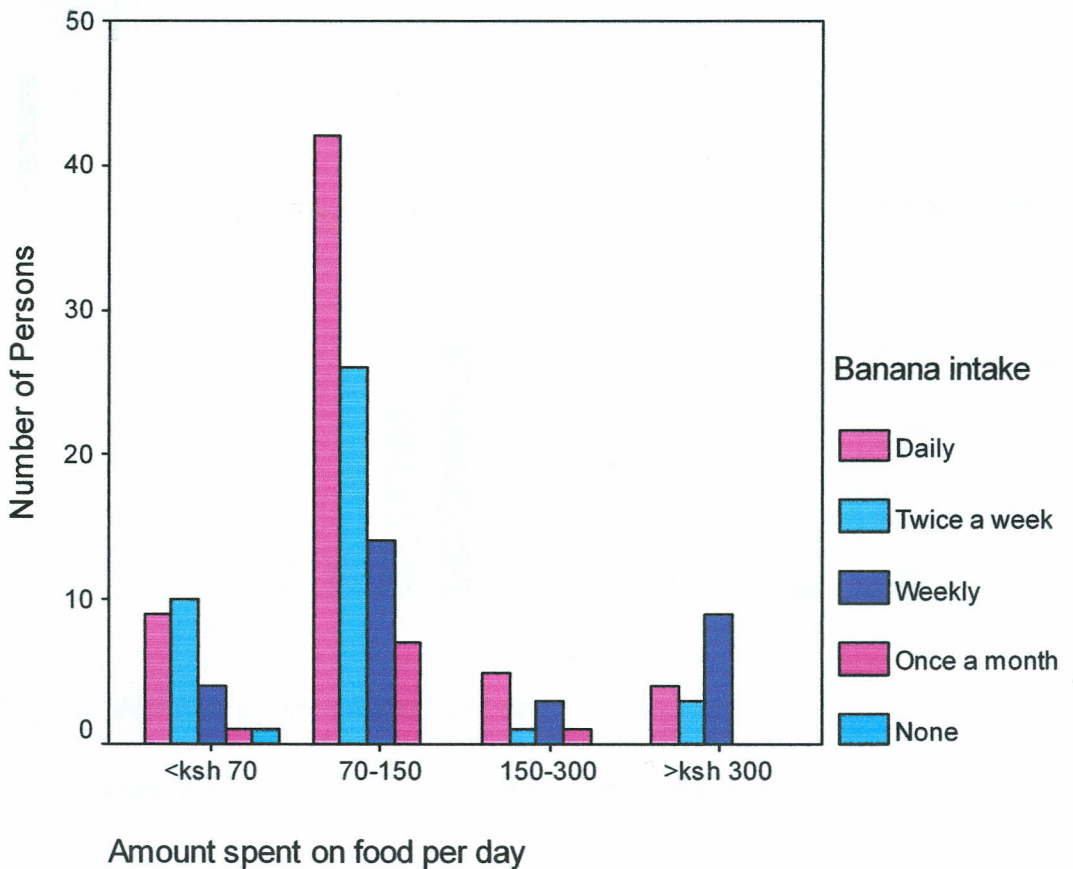


Figure 8: Banana intake and amount spent on food per day

4.3.2 Apple intake and amount spent on food per day

The apple fruit is preferred by those who spend more than Ksh. 300 per day on food. There was a significant relationship between the amount spent on food per day and intake of apple. ($\chi^2=89.510$, $df= 12$, $p<0.05$) Figure 9.

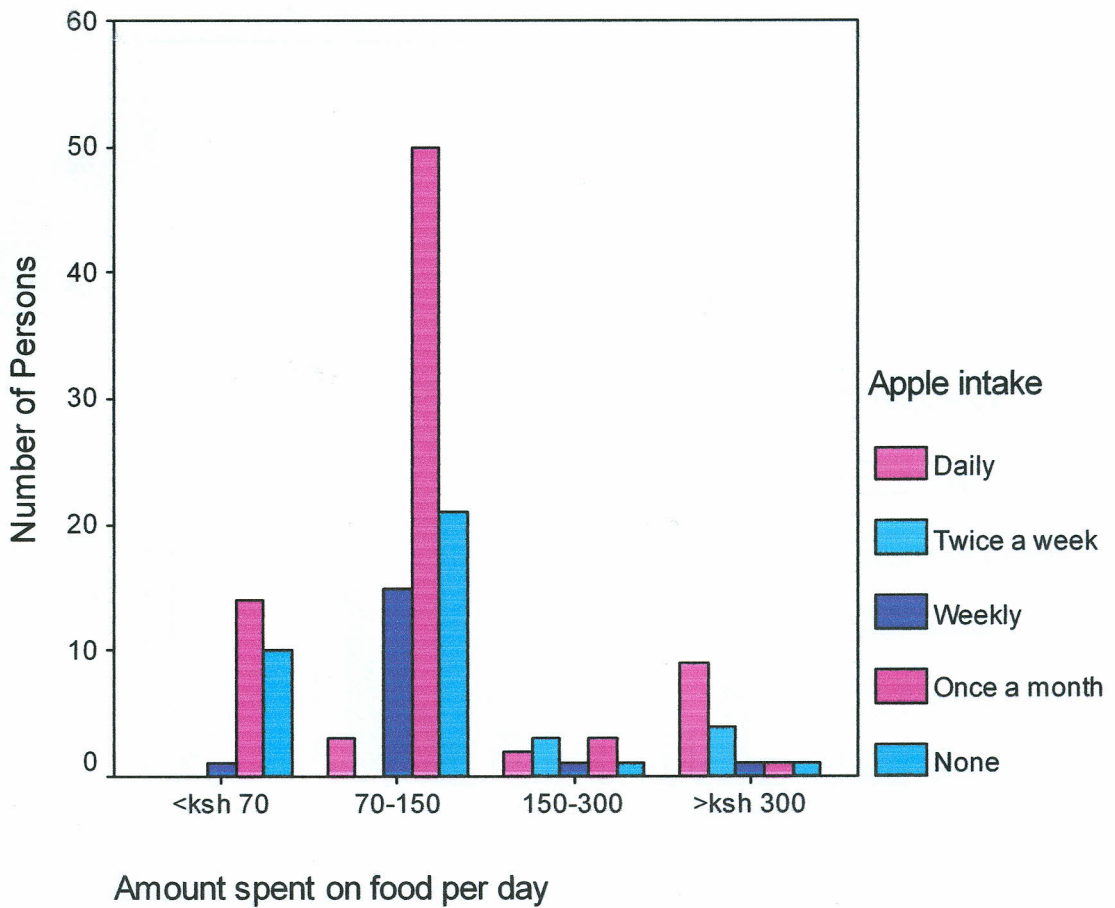


Figure 9: Apple intake and amount spent on food per day

4.3.3 Unpolished flour and cost

There is a significant association between the amount spent on food per day and the intake of unpolished flour. More preferred by those who spend less on food per day. ($\chi^2=34.385$, $df=12$, $p<0.05$) (Figure 10).

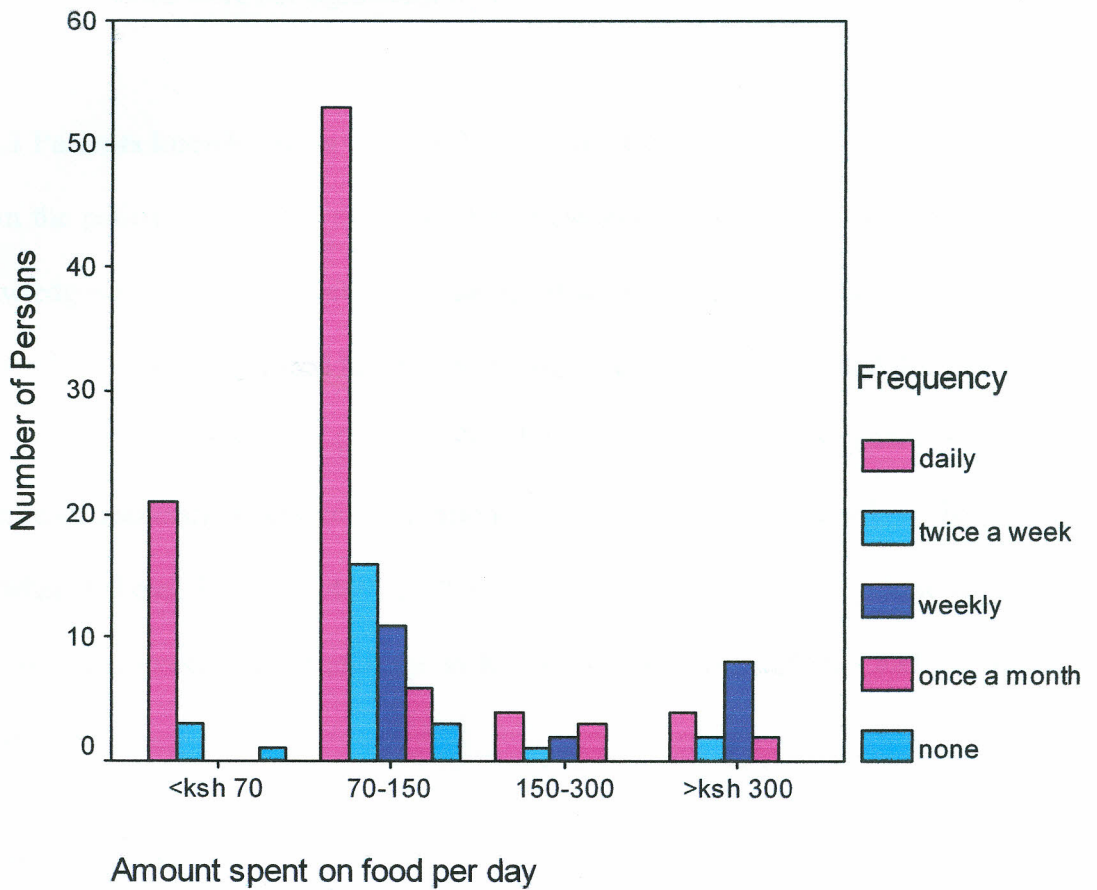


Figure 10: Unpolished flour intake and amount spent on food per day

4.4 Knowledge assessment

Majority of the patients were knowledgeable about diabetes and on dietary fibre. These was reflected by the high proportion that gave the right answers when asked questions regarding diabetes mellitus. Educational level of the patients was highly significant to knowledge on diabetes and dietary fibre. However, sex, age and marital status were not significant to knowledge.

4.4 .1 Patients knowledge on what is diabetes mellitus

From the patients who were sampled, it was evident that majority (79.4%) were knowledgeable on what diabetes mellitus is, as some respondents said it is sugar in the blood, some responded that it is sugar in the urine and others said it is lack of hormone insulin, while a few (20.6%) did not know what it is. There was a significant association between educational level of the patients and knowledge on what diabetes is ($\chi^2=31.469$, $p<0.05$). However, there was no relationship between sex, marital status and age to knowledge on what diabetes mellitus is (Figure 11).

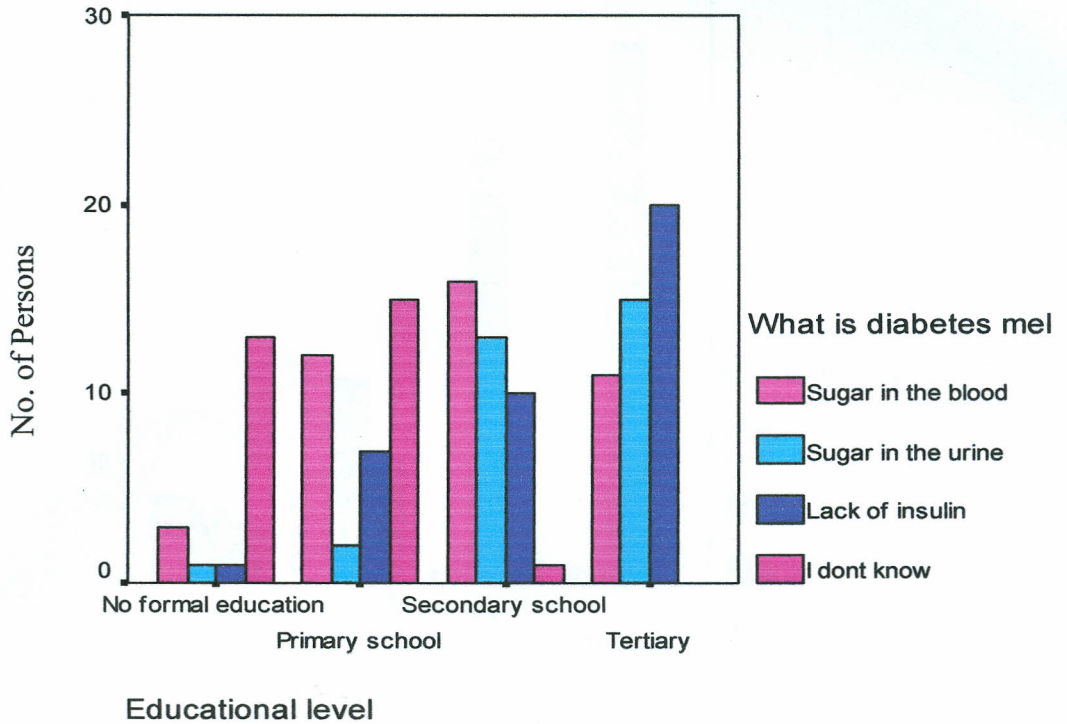


Figure 11: Patients knowledge on what is diabetes

4.4.2 Patients knowledge on whether diabetes mellitus has cure or not

Majority (87.9%) of the patients knew that diabetes mellitus is a chronic illness which has no cure but can be controlled with medication, insulin or proper diet while, 12.9% and 12.1% had the wrong believe that the disease is curable and the rest did not know about the cure respectively. .Patients educational level was significantly associated to their knowledge about the cure of diabetes mellitus ($\chi^2=29.189, p<0.05$) (Figure 12).

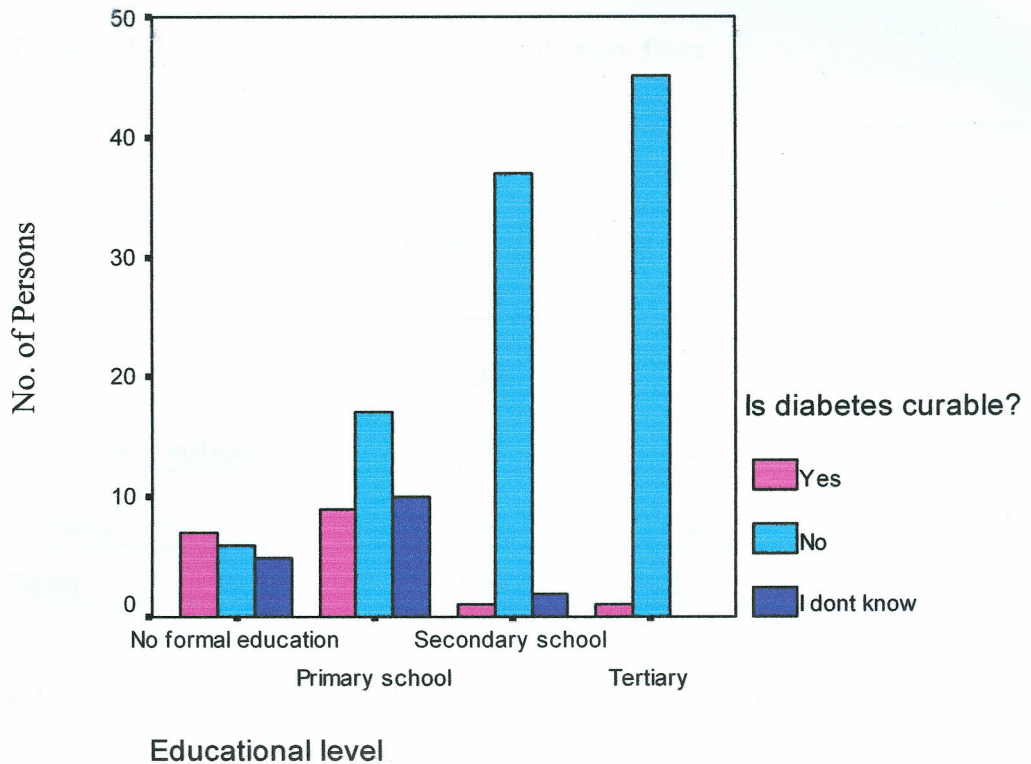


Figure 12: knowledge on whether diabetes has cure or not

4.4.3 Knowledge on what is dietary fibre

Seventy eight percent of the respondents knew that dietary fibre is whole meal while 11.4% said it is refined meal and 10% did not know what it is. Educational level was significantly associated to the knowledge on what dietary fibre is ($\chi^2=13.365, p<0.05$). However, sex, marital status and age of the patients were not significantly associated to knowledge on what dietary fibre is (Table 3).

Table 3: Educational level and what is dietary fibre

Educational level	What is dietary fibre			Total
	Whole meal	Refined meal	Am not sure	
No formal education	9	5	4	18
Primary school	23	5	8	36
Secondary school	37	2	1	40
Tertiary	41	4	1	46
Total	110	16	14	140

4.4.4 Importance of dietary fibre

Only a few respondents (20.7%) thought that dietary fibre would heal diabetes while the rest (79.3%) knew the importance of dietary fibre in reducing blood sugar levels, weight and helps to avert complications. A relationship was established between educational level and knowledge on what dietary fibre is ($\chi^2=19.193, p<0.05$) (Table 4).

Table 4: Knowledge on importance of dietary fibre

Educational level	Importance of dietary fibre				Total
	Reduce blood sugar	Reduce weight	Reduce complications	Heals blood sugar	
No formal education	3	2	3	10	18
Primary school	8	5	9	14	36
Secondary school	12	9	17	2	40
Tertiary	15	10	18	3	46
Total	38	26	47	29	140

4.4.5 Knowledge on which people get diabetes mellitus

The respondents were knowledgeable on which people get diabetes mellitus as 105 of 140 (75%) knew that anyone can get the disease condition regardless of age while, 35 of 140 (25%) of the respondents thought of the different age groups. Educational level was highly associated to knowledge on which people get diabetes mellitus ($\chi^2=33.106$, $p<0.05$) but sex, age and marital status were not significantly associated to knowledge on the same (Table5).

Table 5: Knowledge on which people get diabetes mellitus

Educational level	Which people get diabetes				Total
	Elderly people	Young people	Children	Anyone can get	
No formal education	10	2	0	6	18
Primary school	16	3	1	16	36
Secondary school	1	0	0	39	40
Tertiary	2	0	0	44	46
Total	29	5	1	105	140

4.5 Attitude and dietary fibre intake

The patients' attitude on dietary fibre was positive as they believed that dietary fibre is important in diabetes management.

4.5.1 Patients attitude towards role of dietary fibre in diabetes management

Fifty seven percent of the patients said it was false that dietary fibre does not play a role in management of diabetes which indicates a positive attitude towards it (Table 6).

Table 6: Attitude on role of dietary fibre in diabetes management

Response	Frequency	Percent
True	59	42.1
False	81	57.9
Total	140	100.0

4.5.2 Attitude towards dietary fibre and blood sugar levels

Majority of the patients (77.9%) felt that dietary fibre helps to reduce blood sugar rise amongst the diabetics (Table 7).

Table 7: Attitude and blood sugar levels

Response	Frequency	Percent
True	109	77.9
False	31	22.1
Total	140	100.0

4.5.3 Attitude towards dietary fibre and insulin needs

Many patients (76.4%) felt that dietary fibre intake helps to reduce insulin requirements amongst the diabetics (Table 8).

Table 8: Attitude and insulin needs

Response	Frequency	Percent
True	107	76.4
False	33	23.6
Total	140	100.0

4.6 Cultural Influence

4.6.1 Influence of cultural practices on dietary fibre intake

Culture was found not to influence dietary fibre intake. When the respondents were asked whether there are any cereals, vegetables or fruits that are not eaten by men, women or children in their culture, 100% responded in support of having no such cultural beliefs.

4.6.2 Culture and food eaten frequently

Figure 12 shows cultural ties ranked the least (10.7%) with availability of a particular food being the most (42%) popular reason for frequently eaten foods

among the diabetics. This implies that culture will not influence much on what a patient would take.

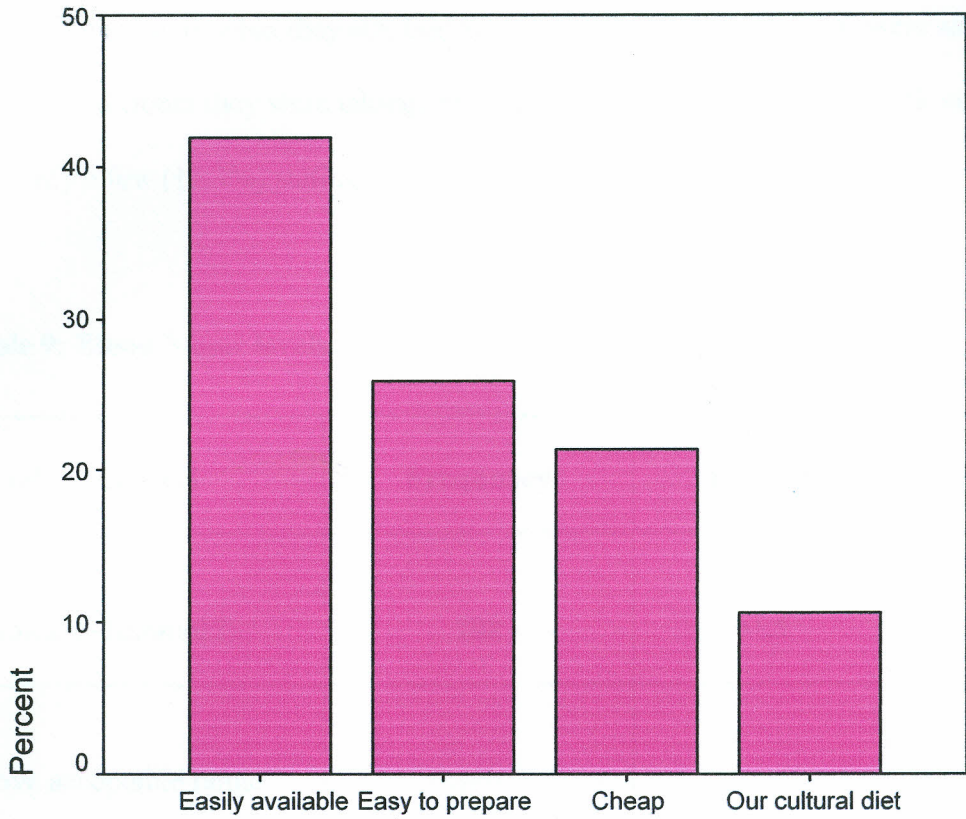


Figure 13: Reasons for frequency of food eaten

4.7 Levels of the key parameters for the patients with variable compliances

4.7.1 Patients blood sugar levels

The blood sugar level of most of the patients (61.5%) was within the acceptable levels and only a few patients (38.5% had above the normal level (Table 9). This compared well with what they ate. For example, when the respondents were asked what type of flours they were taking, majority (84.7%) stated non-refined flours with only a few (15.3%) stating refined flours (Figure 14).

Table 9: Blood Sugar levels

Blood sugar level	Frequency	Percent
Acceptable range (4mmol/ l -10mmol/l)	208	61.5
Above acceptable range (above 10mmol/l)	130	38.5
Total	338	100.0

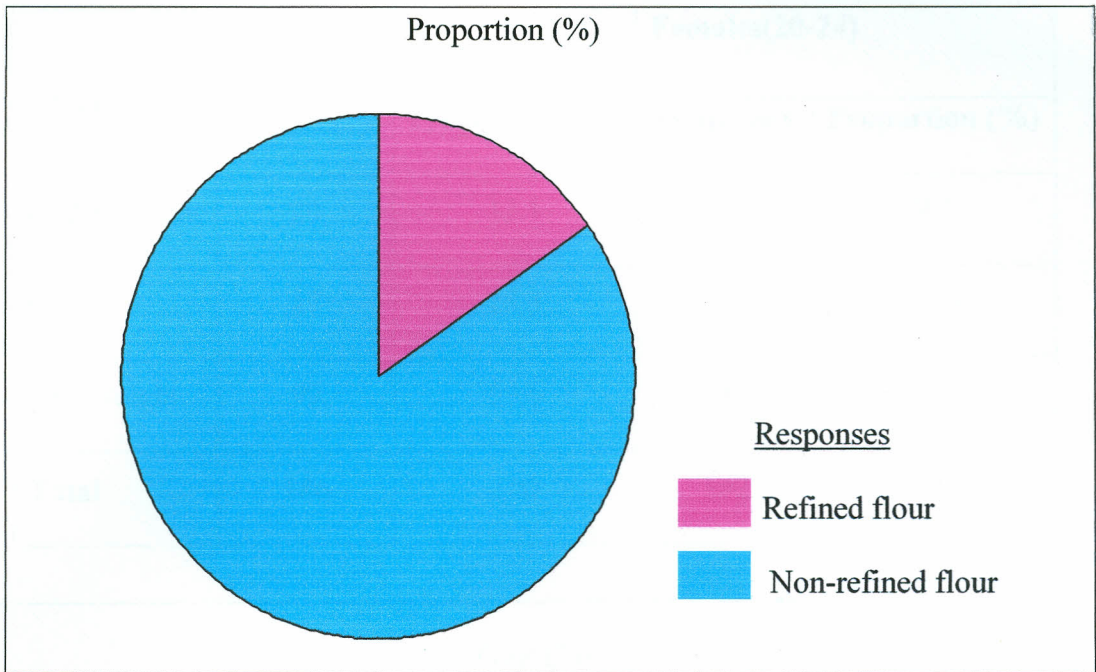


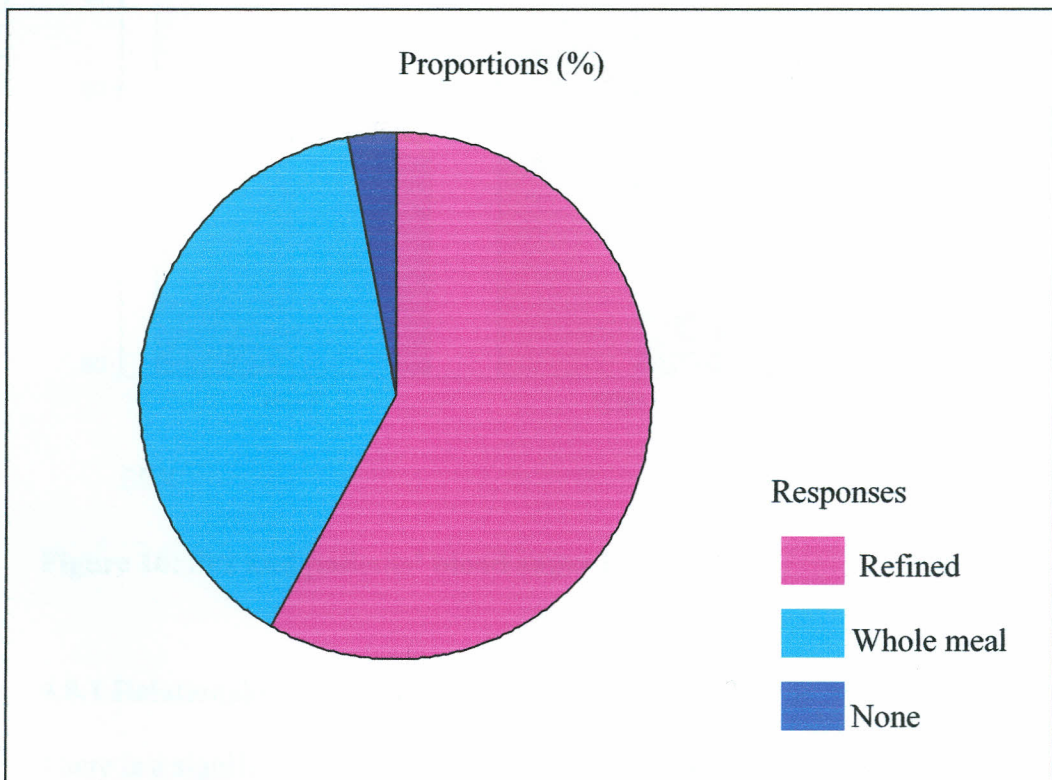
Figure 14: Patients preference on type of flour

4.7.2 Body Mass Index

From the records that were reviewed, 28.3% of the male patients were of ideal body weight while, 12% of them were underweight. However, a big percent (59.6) were above weight .Out of over 300 records that were reviewed, 9.3% of the females were under weight, 13.4% were of ideal weight and 77.3% above weight (Table 10). This can be well explained by the fact that most (58.1%) of the patients are taking refined bread while, a few (38.9%) take whole meal maybe due to the high cost of whole meal bread (Figure 15).

Table 10: Male and Female Body Mass Index

Category	Males(21-25)		Females(20-24)	
	Frequency	Proportion (%)	Frequency	Proportion (%)
Under weight	20	12.1	16	9.3
Ideal	47	28.3	23	13.4
Overweight	99	59.6	133	77.3
Total	186	100	162	100

**Figure 15: Type of bread eaten frequently**

4.8 Relationship between patient's sex and blood sugar

Figure 16 shows; blood sugar is dependent on sex as the males' blood sugar levels were different from the females. Hence, there was a significant difference between sex and blood sugar. ($\chi^2=4.191$, $df=1$, $p<0.05$).

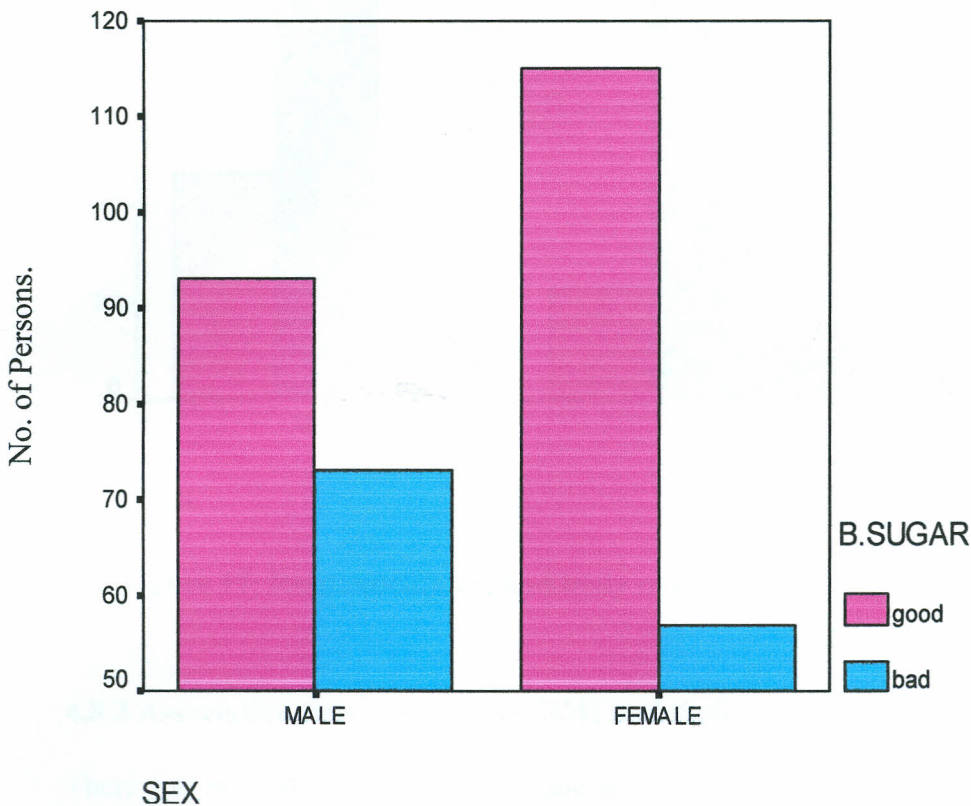


Figure 16: Sex and patients' blood sugar level

4.8.1 Relationship between BMI and sex

There is a significant difference between sex and BMI at ($P=0.0001$) (Fig. Thus, the Body Mass Index for the two sexes is dependent on sex. This is in support of the different ideal BMI for the males (21-25) and females (20-24). Thus, there is a significance association between the BMI and Sex. ($\chi^2=13.554$, $df=2$, $p<0.05$).

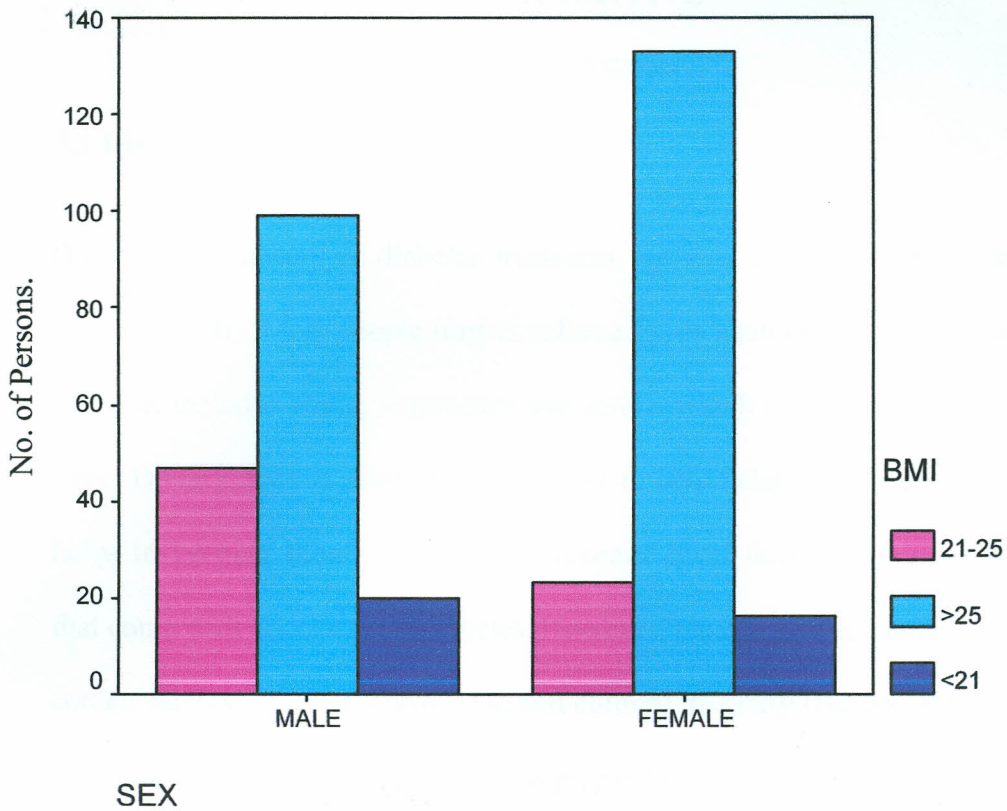


Figure 17: Respondents sex and body mass index

4.8.2 Association between patients BMI and their occupation

There was no significant statistical association between Body Mass Index and the patients occupation at ($\chi^2=7.237$, $df=6$, $p>0.05$)

4.9 Relationship between age and blood sugar level

There was no significant relationship between age of the patient and blood sugar levels at ($X^2=6.110$, $df=3$, $p>0.05$).

CHAPTER FIVE

DISCUSSION

5.1 Discussion

Diet is the mainstay of diabetes treatment but it is often neglected (Grag and Manish, 2000). Most people turn to refined foods abandoning the Mediterranean diet that includes fruits, vegetables and grains which is a rich source of dietary fibre. Dietary fibre is scientifically proved to be beneficial to diabetic patients as it helps in keeping blood sugar at euglycaemic level thus averting complications that come with uncontrolled diabetes. However, change in diet can be attributed to certain factors e.g. cost, knowledge and cultural diversity (Sakwa, 1996). Refined foods are more affordable and easy to prepare as they take less time to cook. It is against this background that a study was carried out on factors that influence dietary fibre intake amongst diabetic patients at Kenyatta National Hospital. Of interest also was to investigate the levels of the three key parameters i.e. blood sugar levels, weight and cholesterol levels of the patients with variable compliances. In order to achieve these objectives, the study was done in two ways: review of patient's records and interview schedules with the patients.

In both cases the ratio of males to females was almost equal (1:1) but in the interview schedule, the males (52.1%) were slightly higher than the females (47.9%). The results compared well with the findings of Kebaso (2004) who stated that the disease affects more men than women.

A large number of patients who participated in the study were above 40 years of age with the majority (76%) using diet and oral medication to manage the disease condition. This further explains that there are more type 2 diabetics than there is type 1. These findings were consistent with a study done earlier in the same institution by Sakwa (1996) and Kebaso (2004) who indicated the same. It also concurs with the generally held scientific fact that type 2 is the most common, 90% (WHO, 1980).

Kikuyu ethnic group was the majority. These findings are in line with those of Sakwa (1996) and Kebaso (2004) who also stated that they are the majority in Nairobi and Central Province as well.

Most of the patients who were interviewed were low-income earners as 63.6% spend between Ksh. 70-150 per day on food while, those who spend between Ksh. 150-300 were few (7.1%). Only 23.6% were employed. This affects the intake of certain foods negatively while others are affected positively e.g. njahi a cereal that has a good amount of fibre and is healthy for diabetic patients, majority (39.3%) of the patient could afford it monthly and some not even taking it at all (17.1%). Brown rice that is also rich in fibre, most of the patients (47.1%) did not take it due to cost. It was more affordable to those who spend between Ksh. 150-300 and above and was preferred monthly (25.7%). However, unpolished flour that is rich

in dietary fibre was affordable to many on daily basis (58.6%)
 5.2 Patients knowledge level on diabetes and dietary fibre

Majority (87.9%) percent of the patients interviewed knew that diabetes mellitus is chronic and has no cure while, 78.6% of the patients knew what dietary fibre was. There was a significant association between patients level of education This made them to make informed choices about their diet which is evident by the big number (79%) that had received diet education. The study's findings concur with a study done by Kaplan and Davis (1986) who said that diabetes education empowers the patient to make his or her own decision as part of the health care team. Knowledge acquired by the patient about their diabetes condition is important in the control the patient is able to exert on their diabetes.

5.2 Attitude influence towards dietary fibre intake

Out of 140 patients who were interviewed, 62.1% of the patient eats the same food as the rest of the family members and 52.1% of the family members do not like food that is high in fibre. This brought out the negative attitude that the family members had towards the food. This was in line with Witschi et al., (1978) who proved their hypothesis that dietary manipulation is best achieved as a family activity. The dietary needs of one member of the family may be met by complete family participation and cooperation. It is emphasized that dietary failure may await the family member isolated by a special diet but with family cooperation, long-term preventive and therapeutic dietary programs can be superbly managed.

5.3 Cultural Influence on dietary fibre intake

Culture was found not to influence the intake of selected foods. This was attributed to the fact that the foods in question were to protein in nature as meats and its products are attributed to certain occurrences in some communities. In addition to this, it can be attributed to people not knowing their cultural background well. These findings were consistent with Sakwa (1996) who stated similarly.

5.4 Patients' level of key parameters

The survey involved the review of patient's records in order to determine the level of the key parameters that are influenced by diet in diabetic patients. Body Mass Index of the patients i.e. the weight of the patients in relation to height indicated that most of the patients were overweight and a few of them were under weight while very few patients were of ideal weight.

The blood sugar levels of the patients were good with majority of them having levels that were acceptable and only a few had high blood sugar levels at the time of review. This was a good indication that the patients were compliant with the right diet since most of them were type 2 diabetic patients who were managing the disease condition with diet and oral medication. On cholesterol, the records were not available since the patients are sent for the test when it is suspected that their cholesterol levels are high.

In conclusion, most of the patients did not seem to have a problem with the intake of dietary fibre as evident by the blood sugar levels. However, there seemed to be problems with their physical activity levels as their body mass index were high above the normal range.

5.5 Summary of key findings

1. Majority of the patients had NIDDM thus were type 2 diabetics.
2. Kikuyu ethnic group were the majority with 73% of the respondents.
3. Cost influence dietary fibre intake positively like with the unpolished flours but had a negative influence on other foods like whole meal bread.
4. Majority of the patients (78.6%) were knowledgeable on diabetes mellitus and dietary fibre. The patients also had a positive attitude towards dietary fibre intake.
5. Culture had little influence on dietary fibre intake.
6. Blood sugar levels of the patients were in good control but majority of them were overweight.

5.6 Implications of the study

Those factors that influence the intake of dietary fibre positively like attitude should be maintained but, those that influence negatively should be looked into like cost to help reduce the complications that arise from uncontrolled diabetes mellitus.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

1. Cost of food is a hindrance to dietary fibre consumption as most of the patients who were interviewed consumed what was within their means. On bread, very few could afford whole meal bread due to cost despite knowing the benefits, also, brown rice, njahi and apple fruit, which have good amounts of fibre, are rarely consumed.
2. Most of the patients are knowledgeable about their condition since the hospital has a well set up diabetic clinic that provides nutritional education to the patients though at a cost of Ksh. 200.
3. Patients attitudes are positive and this is well indicated by the believe that dietary fibre consumption helps to keep blood sugar in good control.
4. Blood sugar levels of most of the patients was within the acceptable levels which indicated good compliance to dietary fibre intake while, most of the patients were overweight which indicated perhaps a low physical activity level.

6.2 Recommendations

1. There is need for the government to remove taxes on healthy foods such as whole meal bread, brown rice to make them more affordable.
2. Encourage diabetic patients to consume fruits, vegetables and cereals since they are rich in dietary fibre.

3. Fee charged for dietary education should be waived in order to encourage patient to come for follow up clinic.

6.3 Areas of further research

1. More research should be carried out on patient's physical activity levels due to poor weight management.

2. Research should be carried out among the diabetics on factors that influence poor attendance to follow up clinic especially those who have had diabetes for over 1 year.

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Telephone No: 318581

When replying please quote

MOS&T 13/001/36C/268/2



REPUBLIC OF KENYA

JOGOO HOUSE "B"
HARAMBEE AVENUE
P.O. Box 60209-00200
NAIROBI
KENYA

3rd May 2006

Peris W. Mbugua

Kenyatta University

P.O. Box 43844

NAIROBI

Dear Sir

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on
"Factors that influence Dietary fibre intake amongst Diabetic patients at
Kenyatta National Hospital, Kenya"

I am pleased to inform you have been authorized to carry out research in
Kenyatta national Hospital for a period ending 30th May 2007

You are advised to report to the Ethics and Research Committee of Kenyatta
National Hospital before commencing your research project.

On completion of your research, you are expected to submit two copies of
your research report to this office.

Yours faithfully

B.O. ADEWA

FOR: PERMANENT SECRETARY

Copy to:

Kenyatta National Hospital

Appendix 1b

**KENYATTA NATIONAL HOSPITAL**

Hospital Rd. along Ngong Rd

P.O. Box 20723, Nairobi

Tel: 726300-5

Fax: 725272

Telegrams: "MEDSUP", Nairobi

Email: KNHplan@Ken.Healthnet.orgDate: 19th May 2006Ref: **KNH-ERC/ 01/ 3516**

Peris Wangui
 Dept. of Public Health
 Kenyatta University

Dear Peris

**RESEARCH PROPOSAL: "FACTORS THAT INFLUENCE COMPLIANCE TO
 DIETARY FIBRE INTAKE AMONG DIABETIC PATIENTS AT KENYATTA N.
 HOSPITAL"**
 (P210/12/2005)

This is to inform you that the Kenyatta National Hospital Ethics and Research Committee has reviewed and **approved** revised version of your above cited research proposal for the period 19th May 2006 – 18th May 2007.

You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given.

On behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of database that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely

[Signature]
PROF A N GLANTAI
SECRETARY, KNH-ERC

c.c. Prof. K.M.Bhatt, Chairperson, KNH-ERC
 The Deputy Director CS, KNH
 The HOD, Medical Records, KNH
 Supervisors: Prof. Moni Wekesa
 Dr. Muriithi
 Dr.W.K. Sigilai

APPENDIX 11

CONSENT EXPLANATION

My name is Peris Wangui Mbugua, a student at Kenyatta University studying Master of Public Health (Family Health and Nutrition). I am interested in finding out “Factors that influence compliance to dietary fibre intake amongst diabetic patients at Kenyatta National Hospital”. A questionnaire will be administered to you, which is aimed at getting information about your age, financial status, duration of your diabetic condition and your dietary habits. The information collected will be strictly used for the purpose of the indicated study. Confidentiality will be highly observed. Your names will not be recorded in the questionnaire; instead the questionnaire will be coded to conceal your identity. The signed consent agreement form will be accessed only by the doctor with your permission as a way of enhancing confidentiality. The information collected will assist in determining what other things should be included or emphasized in the clinic and also in policy making for better management of diabetes. The procedure does not put you in any risk except the extra few minutes of your time it will take. Participation in the study is totally voluntary and you are free to refuse to participate. Refusal to participate will not influence the provision of services by the clinic. You are also free to ask any questions regarding the study. In case of any questions, you may contact the undersigned.

Peris Wangui Mbugua: Tel No: 0724991561

CONSENT AGREEMENT

Study NO.....

I.....(Name of the patient) being above 18 years and with capacity to consent. I have fully been informed about the study entitled: A STUDY ON FACTORS THAT INFLUENCE COMPLIANCE TO DIETARY FIBRE INTAKE BY DIABETIC PATIENTS AT KENYATTA NATIONAL HOSPITAL.

I understand that I may accept or refuse to participate in the study without any penalty or loss of benefits to which am entitled.

YES []

I wish to participate

NO []

I refuse to participate.

RESEARCH INSTRUMENTS

SECTION A

S. No: _____

DEMOGRAPHIC DATA

1. Sex 1. Female () 2. Male () 3. Other ()

2. Age in years ()

3. Marital status 1. Single () 2. Married () 3. Divorced ()

4. Widowed () 5. Separated () 6. Other ()

4. Highest Educational level

1. Never been to school ()

2. Primary school ()

3. Secondary school ()

4. Tertiary ()

5. What is your current employment?

1. Employed ()

2. Unemployed ()

3. Self-employed ()

4. Other ()

6. What ethnic group do you belong to?

() Luo () Kalenjin () Luhya () Samburu

() Kikuyu () Kisii () Turkana () Embu

() Kamba () Meru () Maasai

7. How much do you spend on food per day in Ksh?

1. Below Ksh 70 ()

2. Ksh 70-150 ()

3. Ksh 150-300 ()

4. Above Ksh 300 ()

KNOWLEDGE AND ATTITUDE ASSESSMENT

8. What is Diabetes Mellitus?

() Sugar in the blood

() Sugar in the urine

() Lack of insulin by the body

() I don't know

9. What do you think causes diabetes mellitus?

() A disease condition

() Food types

() Inheritance

() A curse

10. Is diabetes curable?

() Yes

() No

() I don't know

11. If yes in no. 9 what is the treatment?

Conventional medication

Diet

Physical fitness

Traditional medicines

12. Which people get diabetes?

Elderly people

Young people

Children

Anyone can get

13. Should a diabetic patient eat a special diet?

Yes

No

I don't know

14. When you received diet education, were you talked to about dietary fibre?

yes

no

15. What is it?

Whole meal

Refined meal

Am not sure

16. What are its sources?

- vegetables
- whole meal flours
- refined flours

16. Should a diabetic patient eat dietary fibre?

- yes
- no
- I am not sure

17. How does it help one?

- Reduce blood sugar
- Reduce weight
- Reduces complications
- Heals blood sugar

18 What do you feel about these statements? It is true or false that:

	TRUE	FALSE
Dietary fibre does not play a role in management of diabetes mellitus		
Dietary fibre is helpful in weight management for diabetics		
Dietary fibre reduces cholesterol		
A diet rich in fibre makes one satisfied faster than one which has low fibre content		
Dietary fibre helps to reduce blood sugar rise in the blood		
High fibre diets prevents occurrence of type 2 diabetes		
A high fibre diet minimizes insulin intake		
A high fibre diet provides less calories as compared to low fibre diets		
A diet high fibre diet provides vitamins and minerals in trace amounts		

Cultural Beliefs and practices

19. Do members of your family eat the same food as you?

() Yes

() No

20. Do they like it?

() Yes

() No

21. Which foods do you frequently eat at home?

() cereals

() proteins (milk, meat)

vegetables

22. Why are they frequently eaten in your home?

Easily available

Easy to prepare

Cheap

It's our cultural diet

23. What flours do you buy in your house?

Refined

None refined

24. Why?

Tastes well

They are preferred

Costs less

25. What bread do you eat in your house?

Refined

Whole meal

None

26. Why do you buy this bread?

Cost

Taste

Family preference

No reason

27. Are there special foods given to people with diabetes in your culture?

yes

no

I don't know

28. Which is the staple food in your culture?

cereals

vegetables

proteins

I don't know

29. Who are served first in your culture?

no specific order

men

children

women

30. Are there cereals that are not eaten by any of these people in your culture?

	Yes	No	Name of Cereal
Men			
Women			
Children			

31. Are there vegetables that are not eaten by any of these people in your culture?

	Yes	No	Name of Vegetable
Men			
Women			
Children			

32. Are there fruits that are not eaten by any of these people in your culture?

	Yes	No	Name of Fruit
Men			
Women			
Children			

SECTION B

1 How frequent do you eat the following food?

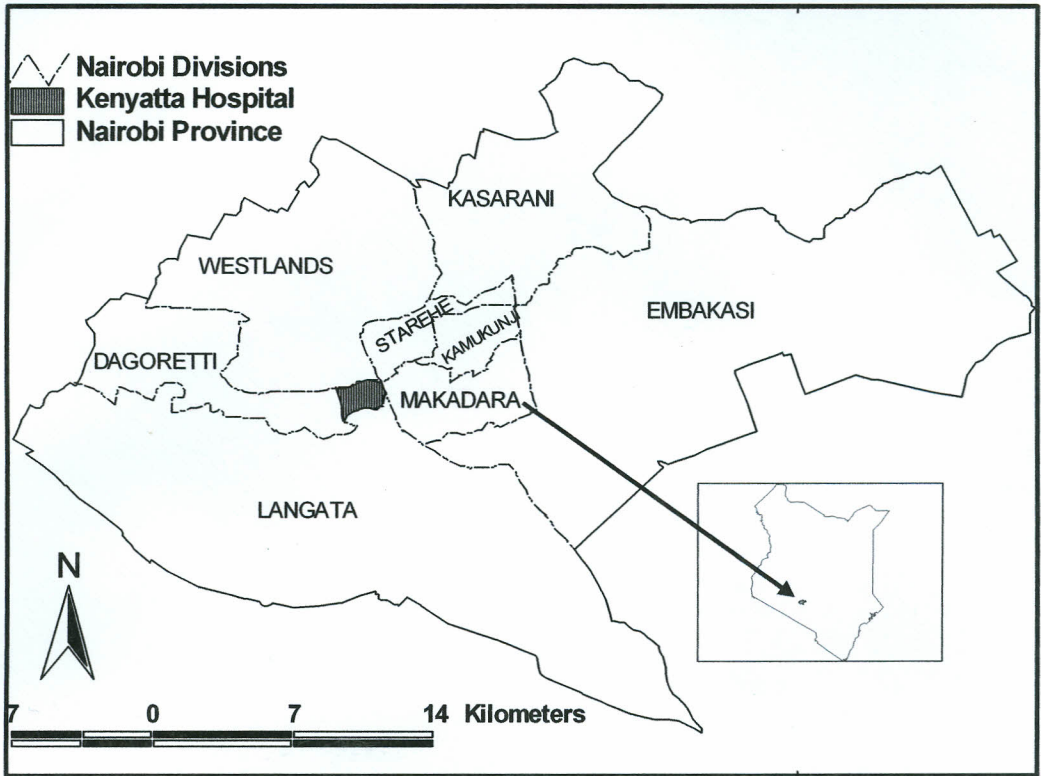
FOOD	UNITS	DAILY	TWICE A WEEK	WEEKLY	ONCE A MONTH	NONE	REASON
FRUITS	Banana						
	Orange						
	Passion						
	Apple						
	avocado						
VEGETABLES	Green peas						
	Spinach						
	Traditional vegetables						
	Sukuma wiki						
	Carrots						
CEREALS	Whole bread						
	Millet flour						
	Brown rice						
	Unpolished flour						
	Lentils						
	Dry peas						
	Njahi						
	Cow peas						
	Kidney beans						
ROOTS & TUBERS	Sweet potatoes						
	Arrow roots						
	Irish potatoes						

APPENDIX III**A DIABETIC PRAYER**

**Our father in heaven,
Thank you for being our teacher, our healer,
Help us to overcome diabetes,
By staying right through diet and exercise,
By living right through not smoking nor drinking,
By thinking bright,
Through positive thinking,
And lead us not into temptation,
But deliver us from stress,
So we could live life to the fullest,
In Jesus name we pray.
Amen.**

**Adapted from:
KIKUYU MISSION HOSPITAL**

MAP OF THE STUDY AREA



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