

CONSUMPTION PATTERNS OF HEALTH-PROMOTING  
PREPARATIONS IN AN URBAN AREA (NAIROBI)  
AND COMPARISON OF THEIR COST TO  
THAT OF LOCALLY AVAILABLE  
NATURAL FOODS

THIS THESIS HAS BEEN ACCEPTED FOR  
THE DEGREE OF MSc IN APPLIED HUMAN  
NUTRITION IN THE DEPARTMENT OF  
FOOD TECHNOLOGY AND NUTRITION

By

GRACE MAKUNGU MBATO

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Master of Science in Applied Human  
Nutrition in the Department of  
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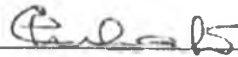
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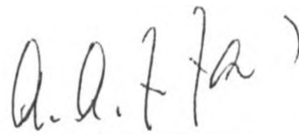
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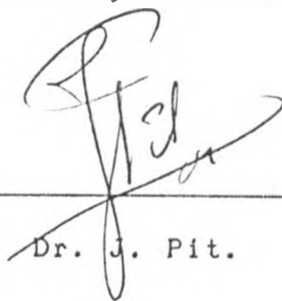
With the supervision and approval of



---

Dr. A.A.J. Jansen.

Department of Community Health  
Faculty of Medicine  
University of Nairobi



---

Dr. J. Pit.

Department of Crop Science  
Faculty of Agriculture  
University of Nairobi

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## ABSTRACT

In recent years, there has been an increasing interest in the consumption of 'alleged' health promoting preparations (HPP)\*. Studies cited in the literature indicate an increased consumption of nutrient supplements, especially in the more industrialized countries. Whereas the pharmaceutical firms continue to promote these products through mass media advertisements and labeling, there is growing concern among health professionals on the use and implications of these preparations. Families already existing on limited budgets may be spending a substantial proportion of their income on HPP which may be costly and unnecessary to their nutritional needs.

At present, there is little documented evidence on the use of these preparations in Kenya. However, the availability and vigorous marketing of these products in the country are a basis for concern.

The study attempted to determine the extent to which urban middle-income families spent their income on HPP and also the factors which influence their consumption patterns. This information could help urban middle income families to optimize

their limited resources by purchasing locally available natural foods instead of health promoting preparations.

A cross-sectional study of 270 households surveyed in three different housing estates in Nairobi revealed that 74.5% of these households were using health promoting preparations. The consumption of HPP was found to be identical in the three clusters. However, the majority of the consistent consumers\* were found in middle and upper middle income estates (Uhuru and Harambee). Households in the low income cluster (Ofafa) spent a greater proportion of their monthly income and food expenditure on HPP than their more affluent counterparts in Uhuru and Harambee clusters.

Most of the users had become aware of these products through the mass media, particularly radio. Clinics and hospitals were also found to be important sources of information for the users of Glucose and Ribena. The six categories of the most frequently used HPP were, squashes such as Treetop and Ribena, Glucose products, Chocolate based products, Fish oils and Multivitamins. Reasons cited for using the preparations were :

- prevention and treatment of colds and coughs (particularly in the use of fish oils);
- the provision of extra vitamins, minerals and energy in order to supplement their diets;
- general health benefits such as improving of appetite.

An additional survey of the shops, supermarkets, markets and kiosks was carried out to determine the prices and nutrient content of HPP (as indicated on the labels) and the prices of locally available natural foods which may be compared to HPP. The survey confirmed that the nutrient content of HPP is overpriced in comparison to their natural sources.

The results of this study show that there is a need for nutrition education to emphasize the importance of having balanced meals, selected from a variety of locally available natural foods as opposed to HPP. The general public should be made aware of some of the false and unsubstantiated claims made for these products through labeling and mass media advertisements.

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PHOTOGRAPH

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Statement of the problem

With time, more people have become aware of their health and the role nutrition plays in it. The food industry has responded to this concern with rapid expansion and promotion of so called health promoting preparations. On the Kenyan market there exists today a wide range of alleged Health Promoting Preparations (HPP) being sold over the counter. Contrary to prescription drugs, these HPP are claimed to be of use for a wide range of general complaints, weakness, loss of appetite, nervousness, apathy and nutritional inadequacy.

Most of the preparations are in the form of pills, tablets, capsules, powders, drinks, syrups or emulsions. In spite of lack of scientific evidence proving efficacy, a variety of HPP seem to be popular and widely consumed.

In recent years, there has been an increasing interest in this practice as well as people's reasons for consuming these preparations. Several studies carried out in the more industrialized countries have shown the consumption of nutrient

supplements for various reasons, in varying degrees of regularity and in varying amounts and kinds (Barre, et al., 1973; McDonald, 1986). Nevertheless, little has been done in Kenya.

Families already existing on limited budgets may be consuming supplements regularly or occasionally, thereby spending considerable amount of money on HPP which may be costly and unnecessary in terms of nutritive value. The consumption of these products may be due to the marketing and promotion strategies of the manufacturing firms. Marketing strategies are increasingly focusing on the less industrialized countries such as Kenya.

The manufacturers and promoters of these preparations make claims with respect to health. The advertisements for the increased consumption of these preparations are usually geared towards specific groups of people such as children, women, people under stress, pregnant and lactating women, and sportsmen.

Too often, consumers believe what is heard and seen in advertisements, brochures or labels and make their purchases accordingly. Sharma (1985) is of the opinion that most of the families who

purchase these preparations are largely influenced by mass media and usually are not aware of their content and nutritive value.

Despite their cost and nutritional value, many families who would have utilized their limited resources by purchasing locally available nutritious foods, continue to buy these preparations with the hope that they will improve or promote their health or that of their family members hence the term "health promoting preparations".

Probably, consumers may not be aware of false claims, misinformation, possible toxic reactions and the fact that money spent on these preparations would be better utilized in improving the nutritional quality of their diets. (Read et al. 1981)

In a preliminary investigation of four shops and four supermarkets in Nairobi city centre and in the residential estate, visited in January 1986, HPP were found in all of them. It was assumed that these preparations are being consumed by most residents, regardless of their socio-economic status.



There are no local studies on the consumption patterns of HPP. However, the availability, marketing and promotion of these products may be an indication of their use in the country.

It is hoped that the study would provide data which would help people to optimize their resources especially when they are limited by purchasing locally available natural foods instead of HPP. The following objectives were therefore identified for the study:-

1.2 Objectives of the study:

1. To determine what was being consumed in terms of HPP.
2. To determine the extent to which urban middle-income families consume health promoting preparations.
3. To determine the frequency and the reasons for the consumption of HPP.
4. To determine the cost and nutritive value of the preparations so as to compare this to locally available natural foods.

5. To determine the average expenditure on health promoting preparations as a proportion of the household's monthly income and food expenditure.
6. To determine the extent to which the reasons given for the consumption of the health promoting preparations are identical to those indicated by the manufacturers through labeling and mass media advertisements.

Middle - income families, living in a part of Makadara division of Nairobi were the focus of study as these are families likely to be existing on limited budgets (households with monthly earnings below KSh 3,999).

### 1.3 Definitions of Terms and Concepts

In this study, the following terms and concepts have been used and are defined as follows :

#### Household

One person or a group of persons with or without a family relationship, who live in the same house or in the same part of a house, who share their meals earnings and expenditures and who take part in the management of the household and render(s) services to it ( the definition includes children).

Health Promoting Preparations (HPP)

Health promoting preparations (HPP) are defined as preparations in the form of tablets, pills, powders, drinks, syrups or emulsions which can be bought from the chemist, shops or supermarkets without a doctor's prescription, but claim to promote health and nutrition and prevention from diseases. These products often suggest to supply one or more essential nutrients, such as, vitamins, minerals and extra energy to an individuals diet. Any nutrients consumed supplementary to (or in addition) to the daily natural diet were considered to be (HPP).

The definition excludes :

- 1) curative types of preparations such as cough syrups e.g Cofta.
- 2) food flavourings such as Roiko (mixture of salt and spices mainly used in the flavouring of stews).
- 3) food substitutes such as baby formulas
- 4) actual natural foods.

In the study, HPP, nutrient supplements, food supplements, preparations, vitamin and mineral preparations have been used interchangeably

because authors have used different terms to refer to the preparations.

#### Nutrient Content of HPP

This was based on information found on the labels or accompanying literature. Nutrient losses likely to occur during processing were not considered. No attempt was made to verify the stated composition by analysis.

#### Recommended Dietary Allowance (RDA)

The amounts of energy and nutrients which will maintain a good state of nutrition in healthy people of all ages (WHO 1974). In some cases, levels beyond this have been associated with toxic effects.

#### Megadosing

Is the regular ingestion of one or more supplemental nutrients in amounts greatly in excess of the RDA.

#### Tonics

Medicinal preparations intended to improve or strengthen the functioning of the body or increase the feeling of well-being (anything that enlivens or strengthens).

Income Groups\*

- i) Lower middle - income group includes households with monthly earnings below KSh 1,999.
- ii) Middle - income group includes households with monthly earnings below KSh 3,999 but above 1,999.
- iii) Upper middle - income includes households with monthly earnings of KSh 4,000 and above.

Comparisons

The major nutrient of the preparation, i.e. vitamin C in Ribena was considered for comparison purposes. This was based on information as found on labels or in advertisements. In most cases, there were more sources of the natural foods providing the nutrients in the preparation. However, the cheapest source with the highest nutrient content was considered i.e. lowest cost per nutrient.

Advertising Code

The 1974 International code of advertising "forbids manufacturers to make false claims about their products" (mainly used in the more industrialized countries). In Kenya, there is only a code governing the marketing of baby foods and prepacked foods which may include Squashes and some of the drinks.

However, there is no code for special diet foods such as Lucozade.

#### Non-prescription

Any medication or preparations bought from the shops, supermarkets and chemists without the doctors recommendations or prescriptions.

#### Occupations

The following classifications were used:

1. Unskilled - casual workers, house servants, cleaners, vegetable vendors.
2. Semi-skilled - messengers, shop attendants.
3. Skilled workers - artisans, draftsmen, machine operators.
4. Lower professionals - nurses, primary and nursery school teachers, clerks and owners of small businesses.
5. Higher professionals - doctors, lawyers, senior civil servants, lecturers, company directors, and owners of big businesses.

#### Consistent consumers

These were households that had indicated using HPP in the last month of the survey and could verify this by showing the products or their containers.

Cocoa

Refers to Cocoa, Milo, Bournivita, Nescao, Drinking chocolate and Ovaltine.

Abbreviations

Sq. Squash

Gl. Glucose

Lu. Lucozade (Concentrated Glucose solution)

Fi. Fish oils

Co. Cocoa

Mu. Multivitamins

Ri. Ribena

Hara. Harambee

\*Figures used in this classification are based on data collected from the sampled households (these were the households net monthly incomes). It was not possible to obtain the latest income classification figures for Nairobi. The Central Bureau of Statistics (CBS) figures are based on Nairobi Consumer Price Indices (using January - June 1975 as the year base). Figures in this classification are therefore higher than those used by CBS. According to the CBS classification, 50% of the sampled households would fall in the upper income group. In this study, Ofafa, Uhuru and Harambee clusters represented low, middle and upper middle

income groups, respectively.



## CHAPTER I I

### REVIEW OF THE LITERATURE

#### 2.1 Introduction

The 'need', real or imaginary of the public to supplement their diet in order to prevent or cure ailments, has been and is being explored by the pharmaceutical industry. There exists a large number of alleged health promoting preparations (HPP) on the market.

In recent years, a number of studies have been carried out to document the use and implications of these preparations. There have been few studies in Kenya. The following is a summary of the studies carried out predominantly in Europe and North America (details of these studies are found in Tables 1 and 2).

#### 2.2 Prevalence of Use

##### 2.2.1 Industrialized countries

Several American surveys have shown that supplementation of the diet with vitamins and minerals is widespread (Schutz, et al., 1982; Kovar, 1985; Barre, et al., 1973; Fleischer, et al., 1982; Stewart, et al., 1985; Read, et al., 1982; McDonald, et al.,

1986; Breskin, et al., 1985; Bell, et al., 1987; Bootman, et al., 1980; Kurinij, et al., 1986; Graney, 1979; See, 1980; Thomas, 1980). The practice is not confined to the United States alone as Worsley and Crawford (1980) reported similar patterns in a random population survey of Australians.

A survey of casualty departments in 20 hospitals in the United Kingdom (1981) also showed that one in every 1,000 casualty patients were admitted having ingested large quantities of vitamin pills which may be an indication of the over use of these preparations (Prentice, T. 1984).

#### 2.2.2 Less industrialized countries

There is little documented evidence on the use of HPP in less industrialized countries. However, some studies have shown the irrational prescription of multivitamins, vitamins and minerals by physicians.

Maltai, et al., (1980) in a survey of drugs dispensed through four outlets in Kenyatta National Hospital (Kenya) revealed that multivitamins were the most frequently prescribed drugs in the hospital (representing 6.3% of the total prescriptions).

A survey of fourteen hospitals in South Brazil

also revealed that multivitamins were the second most frequently prescribed drug representing 4.5% of the total prescriptions (Victoria, C. G. 1982).

Chennabathni, et al., (1982) pointed out that in the Seychelles, 9% of all the prescriptions issued by the doctors working at the largest general practice clinic were for vitamins and minerals, although the prevalence of malnutrition was reported to be low. This may be an indication that the the drugs are prescribed not for treatment but as placebos.

Although the results of these studies are not conclusive, this may be an indication of the overuse of the vitamins or the prescribing of the vitamins for placebo effect. Kagimba (1983) pointed out that in many developing countries vitamins especially vitamin B complex are given as placebos or health tonics when there is no indication that the patient has vitamin deficiency. This may encourage the belief in "a pill for every ill" (Dear doctor 1986). Money may be spent buying vitamins and tonics for non-specific, undefined illness rather than food.

Results of a previous marketing interviews condu-

cted in Nairobi found more products in the liquid or powdered glucose drink category than in any other category studied. The products were available in 86% of the shops surveyed and two thirds of the shops surveyed stocked 2 or more brands. Nearly 75% of the shops surveyed reported selling more units of glucose drinks per week as compared to baby formula. The consumers indicated that the products were consumed as a tonic "to make their babies healthier" and less as food substitutes (Elliot 1985).

Winkoff, et al., (1981) also showed the widespread and early introduction of glucose drinks. The authors discouraged the use of glucose solutions due to their poor nutritional value. Table 1 shows vitamins available in selected countries which may be an indication of their use in these countries.

### 2.3 Economic implications of HPP use

In pursuit of good health, nations may be spending money on the production and importation of HPP, a practice which is likely to distort individual and national health priorities. The practice is common in both industrialized and less industrialized countries.

### 2.3.1 Industrialized Countries

Briggs et al., (1984) for instance points out that in the United States alone, a total of 18 million kgs. of vitamins were sold for pharmaceutical purposes in 1980, a figure which is expected to have risen by 1985.

According to Schutz, et al., (1979), 49.5 million pounds of vitamins were produced in the United States. During the same year, US\$ 1,690 million worth of vitamins, nutrients and haematinic preparations were shipped to the United States for human use. McDonald (1986) argues that in the United States alone, vitamin and mineral supplement sales exceed US \$2 billion annually.

Similarly, in 1982, US \$1.8 billion was spent on over the counter (non-prescription) vitamin preparations in the United States (Prentice, T. 1984). By 1984, the figure was up to US \$140 billion, with estimates suggesting it would reach US \$ 2.2 billion by 1989 and as much as US \$3.5 billion by 1990 (Hetch, A. 1979).

In Britain, over the counter sales of vitamins were estimated at over 45 million pounds while in

1981 the N.H.S. spent 5 million pounds on prescribed vitamins (Drugs and Therapeutic Bulletin 1984).

### 2.3.2 Less industrialized countries

In many developing countries, vitamin and tonic preparations account for 10-20% of the total drug consumption. Expenditure on vitamins in 1979 represented 13% of the drug budget in Pakistan and 8% in Venezuela (Lancet 1980).

Reyes (1982) revealed that in 1980, approximately U.S. \$10.62 million (approximately 181.45 million KSh) was spent on vitamin preparations; 8.2% of the total drug expenditure, in Brazil.

Reyes findings also revealed 265 vitamin B products (many of them oral preparations which are useless), 229 brands of B complex and vitamin C products in Brazil. In 1982 some U.S. \$280 million (approximately 478.24 million KSh) worth of vitamins, tonics and nutritive supplements were sold in India.

Melrose (1982) indicated that in 1980, the value of vitamins and tonics imported into North Yemen was 17.8% of the total pharmaceutical imports.

But only 1.3% of the total was spent on importing drugs to treat 3 of the country's most widespread diseases, malaria, bilharzia and T.B. affecting 800,000 people. In Sri Lanka, vitamin preparations and soluble Aspirins and cough remedies account for over 50% of the drug production (Report on local production 1977).

A study carried out in Nepal (1980), where serious respiratory disease, anemia and malnutrition are major health problems, revealed that out of 2000 different products on the drug market, 733, more than one third (35%) were tonics (Pivot and Viteri, 1985; Melrose, 1982; Sharma, 1985).

According to the Indian Council of Social Science Research (ICSSR) and the Indian Council of Medical Research (ICMR), out of the total drug production in India in 1976, 25% is taken up by vitamin, tonics and health restoratives and enzyme digestants, mostly consumed by the relatively well fed population (Melrose 1982).

Bangladesh which has a high prevalence of malnutrition, was found to have vitamins, iron tonics, cough and cold preparations, enzymes, antacids, restoratives and volume restorers. These products

represent 33% of the drugs on her markets. Fixons and Glaxo (a pharmaceutical company) markets 36 preparations and another six containing minerals in the same country (Medicus 1984, Melrose 1982). Most of the products marketed by Glaxo are fruit flavoured and sugar coated multivitamins and minerals. Although these preparations may be of some value in a country such as Bangladesh, they are likely to be more expensive than the dietary sources.

In India, 126 preparations containing Vitamin B are sold on the market. In Brazil, 160 products are available most of them being oral multivitamin mixtures. In North Yemen, Glaxo markets syrups containing Vitamin B 12 and D (Medicus 1984).

In Costa Rica in 1974, it was estimated that the imports of vitamins from several different countries were heavily overpriced. These ranged from 25% with vitamins from Denmark and up to 54% from Japan (United Nations Centre on Transitional Corporations 1984).

Consumption of nutrient supplements may waste limited individual and family financial resources. In 1984 in Chile for example, a 120 ml bottle of C



multivitamins, tonic solution cost 75.15 KSh (approximately U.S.Dollars 4.40). For exactly the same amount of money, it would have been possible to buy 12 eggs, 500 gm of butter, 1 litre of milk, 1kg apples, 1 kg of potatoes, 1 cabbage, 1kg of oranges, 1 kg of rice and 2 lemons (Locher 1985). Medawar (1983), while commenting on the expensive damage of vitamin supplements, stated that "over 100% of the poorest countries in the world spend under 10 pounds per person per year on health". In such circumstances, spending on drugs must be meticulously justified. Multivitamin preparations may do little more than bolster the balance of payments of industrialized countries (Lancet 1980). This is because in industrialized countries, clearly identifiable vitamin deficiencies are rare except in some specific subgroups of the population. For example in the United Kingdom, vitamin deficiency due to poor diet is estimated to occur in 1 or 2 people out of 1,000. Usually the deficiencies are vitamin D or folate. In the U.S., clinically apparent vitamin deficiencies are rare and sub-clinical deficiencies are difficult to detect. (Drugs and Therapeutics Bulletin 1984).

Whereas the use of nutrient supplements may be beneficial in clear cases of deficiency (as the

case may be in some of the developing countries), the long term answer lies in improving the diet rather than buying expensively packed multivitamins, vitamins, tonics and appetite stimulants (Dear doctor 1986; Stanton 1986; Harawa,1987).

#### 2.4 Factors likely to influence the consumption of HPP

The consumption of nutrient supplements may be attributed to a variety of factors which are associated with peoples perception of their health, diet and food beliefs (Worsley, et al., 1986).

##### 2.4.1 Deteriorating nutritional value of food

A popular belief held by some of the consumers is that " the nutritional value of food supply is inadequate and/or the quality of food has deteriorated over the past decade". Therefore, vitamin and mineral supplements are regarded as a reliable method of ensuring that real or imaginary shortcomings are corrected. (McDonald, 1986, Schutz 1982, Stanton 1986, Bowerman, et al., 1983; Bell, et al., 1987 Consumers Digest 1980, Kurinij et al., 1986, Christenson, et al., 1979; Hale, et al., 1982, American Academy of Paediatrics 1980).

Some of the consumers operate on the mistaken

theory that "if some is good, more is better" and they consume the preparations accordingly (Schutz, et al., 1982; Consumer Digest 1987).

#### 2.4.2 Prevention and cure of disease

In some cases, the consumers purchase the preparations as they believe the preparations can prevent or cure certain illnesses such as a common cold, cancer, schizophrenia, attention deficit disorders, mental retardation and a multiple of other conditions. (Bowerman, et al., 1982). On the other hand, the consumers believe that vitamin or mineral supplements enhance sports performance, vitality or increase feelings of well being (Smith 1976).

In most Malaysian homes, health foods are thought of as 'wonder' products which can improve health, cure sickness and generate physical and mental development among family members (Health Food Industry 1983).

#### 2.4.3 Health claims

The misconceptions and myths about specific benefits and roles of nutrient supplements and the general "health promoting effects" of vitamins and minerals are further reinforced by health claims

found on the labels or accompanying literature. For example, some of the preparations claim to relieve loss of appetite, promote growth by building the body's resistance to infection, generate mental and physical development, cure sickness or restore the body's level of vitamins or minerals when run down with stress or when one has been ill. (Utusan Konsumer, 1980, McDonald 1986). Many of the claims seem to be exaggerated, breaking several clauses of the advertising code\* and misleading the consumers, as there is no evidence to substantiate the claims.

The consumers may also misinterpret the nutritional claims, for example, emphatic claims of high vitamin C content are interpreted as a comparison claim, emphasizing the benefits of canned orange drink instead of fresh orange juice (Vermeerch, et al., 1980).

#### 2.4.4 Marketing strategies

The widespread consumption of HPP is further fostered by vigorous marketing and advertising. Links between consumption of HPP and mass media advertising have been shown previously (Breskin, et al., 1985, Williams 1985; American Academy of Paediatrics, 1984).

Comments from several doctors on the use of HPP particularly appetite stimulants indicate that advertising may encourage certain harmful practices; for instance, vitamin tonic being taken for a multiplicity of physical symptoms, the cause of which may be serious physical or disorders necessitating professional medical assessment and treatment (Dear doctor 1986).

In Kenya, no specific recommendations have been made with regards to the marketing and distribution of the 'alleged health promoting preparations'. Consumption is left at the discretion of the individual families or family doctors.

Sharma (1985) warns, that advertising of nutrient supplements is often fraudulent and misleading, which may be dangerous to the consumers.

To promote some of the preparations on the Kenyan market, they are sold alongside other products, prices are reduced at certain times or they are given as a free sample.

## 2.5 Users of HPP

Despite little evidence of the need for nutrient

supplements, infants, children, adolescents, elderly and adult men and women continue to consume supplements. (McDonald, et al., 1986, Barre, et al., 1973; American Academy of Paediatrics, 1980; Gray, et al., 1986).

Studies carried out in America indicate that the consumption of nutrient supplements tended to be more among whites than blacks and higher among children from families with high levels of education and income. The consumption was also found to be higher in females than males (McDonald, et al., 1986; Bowering, et al., 1986; Gray, et al., 1986; Schutz, et al., 1982; Kurinij et al., 1986).

There is no literature on the consumption patterns of HPP in Kenya. However, the mass media advertisements tend to focus on infants, children, expectant and nursing mothers, convalescents and sportsmen.

According to Koplan, et al., (1986) supplementation as often practiced without medical indication or scientific justification, can have risks which include chronic over medication and acute overdose (particularly the fat soluble vitamins).

Healthy adult men and healthy non-pregnant, non-lactating women, and children, consuming a usual, varied diet, do not need vitamin supplements. Vitamin preparations as dietary supplements may only be useful for people with unusual lifestyles or modified diets or underlying diseases or unavailability of food sources of specific nutrients. (McDonald, et al., 1986, Kurinij, et al., 1986, Council Report, 1987, Breskin, et al. 1985). A summary of some of the studies on consumption of HPP is given in Table 2.

Table 1 VITAMINS ON SALE IN SELECTED MARKETS IN 1985

Vitamins	India		Indonesia		Middle East		Africa		Carribbean		Totals	
	No.	% *	No.	%	No.	%	No.	%	No.	%	No.	%
Total No. of vitamins	252	-	218	-	203	-	134	-	92	-	899	-
Irrational formulations	178	70.6	151	69.3	102	50.2	69	51.5	36	39.1	536	59.6
Irrational formulations with iron	86	34.1	49	22.5	45	22.2	30	22.4	18	19.6	-	-

Source : Mims, India, Oct.1985; Mims Indonesia, Feb. 1985; Mims Middle East, April 1985; Mims Africa, May 1985; Mims Carribbean, May 1985.

% of the total drug production in each of the countries.



Table 2 SUMMARY OF STUDIES ON CONSUMPTION OF HPP

Author	Year	Title of Study	Population of Study	Location	Methods of Data Collection	% of Users	Preparations	Recommendation
Barre, et al.	1973	Use of vitamin and mineral supplements (prevalence & justification)	Urban school children	Montreal, Canada	7 day dietary intake plus interview (part of the nutritional status longitudinal study)	66.6 n=262	70 different commercial combinations of minerals & vitamins used vit. A, D and C more popular	Nutrient supplementation as judged from the study appears generally myth and waste of money.
Bowerman, et al.	1963	Nutrient consumption of individuals taking or not taking nutrient supplements	Adults (19-97 years)	Colorado U.S.A	The subjects previously classified as users or non-users of supplements.	53 n=150	vit. C B E multivitamin iron, zinc, calcium & leathin	No significant difference in dietary intakes of nutrients from food were observed between users and non users.
Breskin, et al.	1955	Vitamin intakes and biochemical indexes	40-105 month old children	University of Washington U.S.A	Mothers of children attending clinic invited to enroll as controls. 24 hr recalls elicited from parents, contents of supplements itemized. All the anthropometry & biochemical procedures at the clinic.	53.3 n=30	ascorbic acid thiamin riboflavin vit B-6 B-12 folate	Diets of children between the ages of 40 and 105 months generally supply sufficient amounts of water soluble vitamins & supplementation use offers no clear improvement in related biochemical indexes of user.

Table 2: Continued....

Bell, et al.	1957	Evaluation of commercial multivitamin supplements	5pharmacies 3grocery stores 3health food stores	New Haven, USA	vitamin & mineral levels for each multivitamin mineral preparation in stock were recorded	19 (of the total 257 products surveyed were found to be appropriate	multivitamins and minerals stress formulas B complex & childrens supplements	The results illustrate that an extensive line of multivitamins available to the consumer.
Bowering, et al.	1955	Nutritional status of children & teenagers in relation to vitamin & mineral use.	Children and teenagers	National Health & Nutrition survey U.S.	24 hr recall 3 month food frequency hematological & other biochemical measurements anthropometry & physical examination	45.2 n=20000 people 7090 children	multiple vitamins & iron multiple vitamins + vit C and iron vit.A	The difference between users and non-users not clear.
Cook, et al.	1979	Vitamin & Mineral supplementation and the nutrient intake of children	Children in the 2nd and 6th grade	Illinois U.S.	Mothers interviewed & asked to keep 3 day dietary records	43.3 n=60	multiple vitamins & iron vit. C	Vitamins & mineral supplements should only be used when other methods fail.
Gray, et al.	1956	Vitamin supplement use in Southern California	Retirement community	Southern California	Questionnaires mailed to participants	62% men 69% women n=11555	vitamin A, C and E multi-vitamins	A substantial proportion of residents consumed high levels of Vit. A, C, and E.

Table 2: continued...

Hale, et al.	1982	Use of nutritional supplement in an ambulatory elderly population	Ambulatory elderly	Dunedin programme U.S.	Elderly subjects screened annually	45% men 34% women n=3192	multiple- vitamins multiple- vitamins + iron vit.E & C calcium & potassium	There is a pressing need to educate consumers & health professionals concerning nutritional requirements of the elderly & specially the roles of preparations.
Maitai, et al.	1980	A survey of outpatient prescriptions dispensed at Kenyatta National Hospital (KNH)	Prescriptions at hospital	Nairobi, Kenya	Checking on outlets of drugs dispensed at KNH	63% of the prescriptions	Multivitamins most prescribed drug	This could be an indication of high degree of malnutrition or misuse of multivitamins.
Kovar,	1985	Use of medication & vitamin supplements by youths & children	Youths & children	U.S.A.	Part of the national health interview survey	36 n=42000 families	Vitamin & mineral supplements	The apparently common use of medications of vitamin & mineral should alert everyone to the possibility of poisoning
Koplan, et al.	1986	Nutrient intake & supplementation in the United States	Non-institutionalized population ages (6 months)	U.S.A (NHANESII)	Cross-sectional survey data collected from the survey	35 n=12503	Vitamins & minerals (not specified)	Appropriateness of vitamin and mineral supplementation has important, economic, clinical and public health ramifications.

Table 2: Continued...

Read, et al.	1982	Food supplement usage by the elderly	Elderly (60 years & over)	Reno, Nevada U.S.	Questionnaire administered by nutritionist during lunch time	62 n=170	Vit E,C,A,D multivitamin calcium potassium B complex vit.C mineral supplements multivitamins	Nutrition education is needed to demon- strate the relat- ionship of adequate diet, good health & appropriate vs inappropriate food supplement consumption.
Read, et al.	1982	Food supplement usage by adolescent males	Adolescent males	Reno, Nevada U.S.	Staff admini- stered question- naire	45 n=569	Vitamin C multiple vit- amins minerals + proteins	Food supplement use was related to participation in physical fit- ness, medical care etc.
Read, et al.	1983	Nutrient & food supplement practises of lacto-ovo vegetarians	Volunteer vegetarians	U.S.	24 hr diet recall food supplement use questionnaire & nutritional knowledge questionnaire	85 n=49	Multiple vitamin C B complex vitamin A calcium minerals (not speci- fied)	Lacto-ovo vegetarians use food supplements although 24-hr diet recalls revealed little need for supple- mentation.
Roberts, et al.	1984	Supplementary practises of dieticians	Dieticians	Washington State, U.S.	Self admini- stered quest- ionnaire	27 n=1500	Multivitamins preparations	

Table 2: Continued...

Schutz, et al.	1952	Food supplement usage in the Western States	Adults	U.S. 7 Western States		60 n=2451	Vitamin C multivitamins + iron multiple vitamins vit. E	The need to influence the consumers against the use of supplements at an early stage
Stewart, et al.	1955	Vitamin Mineral supplement Use	Adults	U.S.	A telephone survey	19.9 n=2966	Simple vitamin miscellaneous &Products	Basis for concern for high intakes of supplements
Worsley, et al.	1956	Diet, food beliefs & dietary supplementation	Adults	Adelaide Australia	Questionnaires mailed	97.8 males 91.3 females n=1000	Multivitamin bran vit B1 wheatgerm B complex	Need for more detailed investigation

## CHAPTER III

### DESCRIPTION OF THE STUDY SETTING

Nairobi, the capital of Kenya stands at an altitude of 1650 metres (5,425 ft.) above sea level. The city boundaries enclose an area of 690 square kilometres (266 square miles). Nairobi has a sunny temperate climate with temperatures rarely falling below  $24^{\circ}\text{C}$  during the day and  $10^{\circ}\text{C}$  during the night. There are two rainy seasons: the short rains, which usually fall between October and December and the long rains from March to early June. According to the 1979 census, Nairobi has a population of 800,000 people and is expected to increase to over 3 million by the year 2000. Nearly 37% of Kenya's urban population is concentrated in Nairobi (Waweru 1980).

#### 3.1 Reasons for choosing Nairobi and the estates of study

Nairobi was selected for the study because of the following reasons :-

- i) Nairobi being the largest city in Kenya has the largest portion of the urban population which is composed of people with varied characteristics and household compositions. The

mass media campaigns are more concentrated in the urban areas such as Nairobi, where more susceptible audiences are to be found. Nairobi was therefore ideal for the study as it was assumed that all these factors would facilitate the field survey considering the limited time and money available.

ii) It was also assumed that the results obtained for families in Nairobi could be applied to other urban areas in Kenya

iii) The division was chosen because of its large size and population density. The division also includes a cross-section of people of different socio-economic classes (CBS, 1979).

### 3.2 Situation

Makadara division is an area east of Nairobi and approximately 5 km from the city centre. It consists of 13 estates. It extends as far as Jomo Kenyatta Airport on the west and industrial area on the east. Within the division, the housing estates of Uhuru, Harambee and Ofafa Kunguni were randomly selected as sampling clusters. Households were sampled systematically within each cluster.

### 3.3 Administration

Makadara is one of the five administrative divisions of Nairobi province. It is subdivided into six administrative locations namely: Makadara Dandora, Embakasi, Bahati, Maringo, Mbotela and Makongeni. The division is headed by a district officer who is assisted by chiefs responsible for each of the locations of the division.

### 3.4 Social amenities

The division has some of the oldest (Ofafa I) and most modern (Buruburu) estates in Nairobi. The houses in the area are both rented and owned. Except for the southern part of the division (Dandora), the rest of the division is served with electricity, water, shops, supermarkets and it is accessible by tarmac roads. Apart from the city council clinics within the division, there are also private clinics within the estates.

### 3.5 Population and size

Makadara division is the largest division (in area) in Nairobi and covers some of the most densely populated estates. Apart from the administrative division of six locations, the area is also divided into the following wards, households and population (according to 1979 population census).



Table 3. Distribution of wards, households and population of Makadara division

Ward	Households	Population
1. Embakasi	3071	13502
2. Dandora	6253	22672
3. Harambee	3034	16257
4. Lumumba/Jerusalem	2620	13544
5. Makadara	3683	11931
6. Kaloleni	1039	5120
7. Maisha Makongeni	4151	16606
8. Mbotela	3532	14073
9. Bahati Kimathi	2963	10670
10. Maringo Ofafa	3218	13083
11. Uhuru/Buruburu	4466	23813
Total	38030	161271

It was not possible to obtain the latest figures on population. However, since 1979, new estates have come up and the population has increased considerably. The population is estimated to be over 200,000 (Githingi and Nthiga, 1986, personal communication). The estates within the wards are grouped into the following socio-economic groups :

Upper middle-income

Harambee (tenant purchase)

Kimathi

Pioneer

Donholm

Buruburu (phases 2-5)

Middle-income

Jerusalem/Jericho

Ofafa Maringo

Kaloleni

Lumumba

Uhuru

Umoja

Makadara

Outering

Lower middle-income

Ofafa Kunguni

Bahati (excluding civil servant quarters)

Dandora (phase 1-5)

(personal interview with city planning officials and the local administration 1986).

The classifications were based on type of housing structures, value attached to the houses and the average monthly rents for houses in these estates. For example, most of the houses in the estates considered to house lower middle-income families have wooden shutters, no separate sanitary facilities incorporated, little or no privacy and the physical environment is generally poor especially the city council houses which are poorly main-

tained. The average monthly house rents in these estates range between KSh 140-300. The present market value for most of the houses in this area would be approximately KSh 80,000. Whereas those considered to house middle -income and upper middle income would cost approximately KSh 120,000 - 200,000 and 300,00-475,000 KSh respectively.

Housing affordability (mainly for the tenant purchase) was also used in classifying the houses in the various socio-economic groups. This was particularly for estates considered to house upper middle income families. In these estates the average monthly house rents range between 1800 -3000 KSh and similarly monthly average mortgage repayment range between 2000 - 4500 KSh.

Although the initial selection of the sampled estates was based on the above classification, it was hoped that after the survey, households would be classified accordingly (low middle income, middle income and upper middle income). This is due to the fact that Nairobi like any other urban town has housing problems and people may live in certain areas or estates because of security, stability of the houses or the lack of preferred houses given their monthly income. Similarly the

City Commission has no consistent pattern of allocating houses. For example, people with high incomes may be living in estates considered to be low middle income just because they have been allocated houses in these areas.

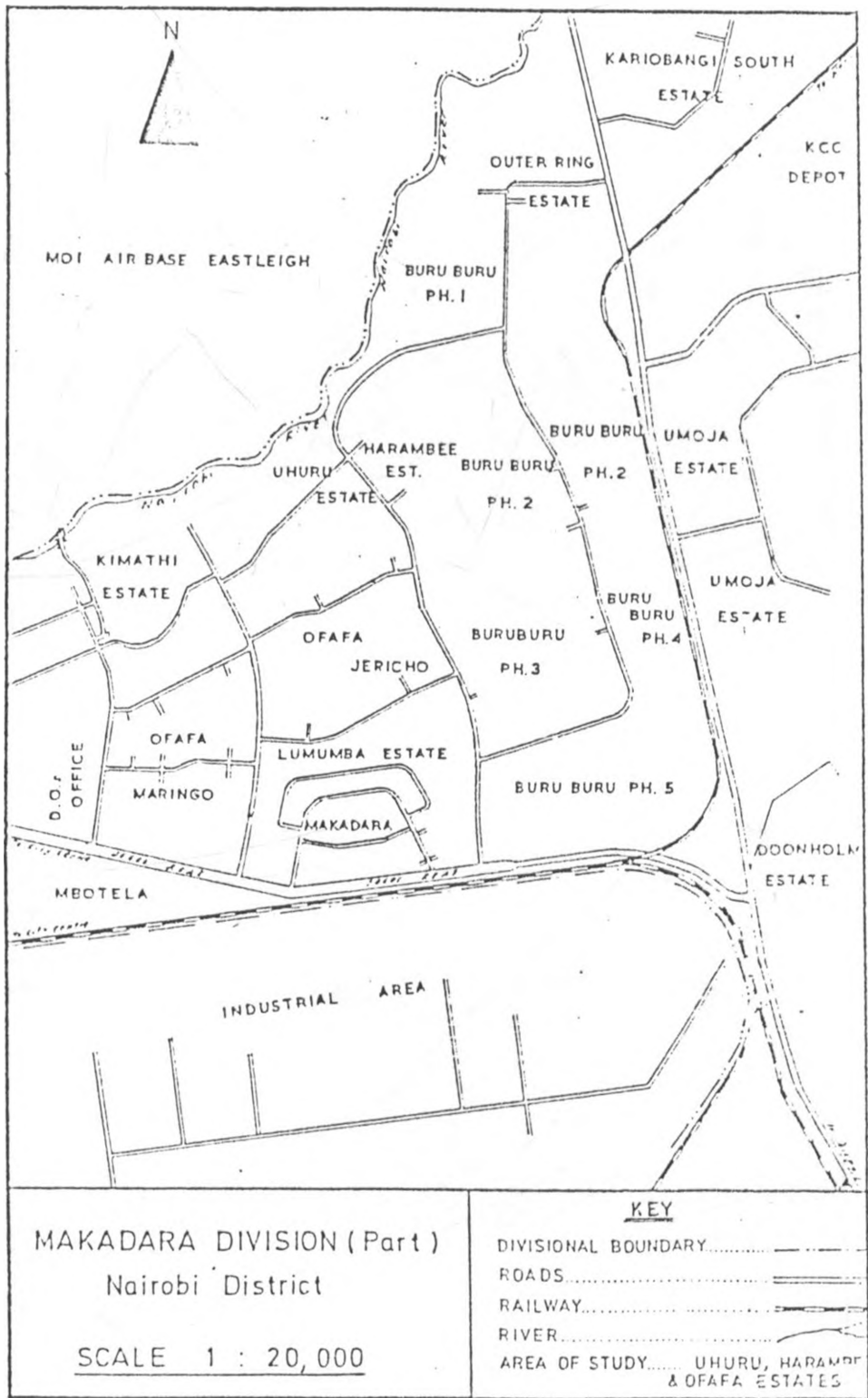
### 3.6 Shops, supermarkets and kiosks

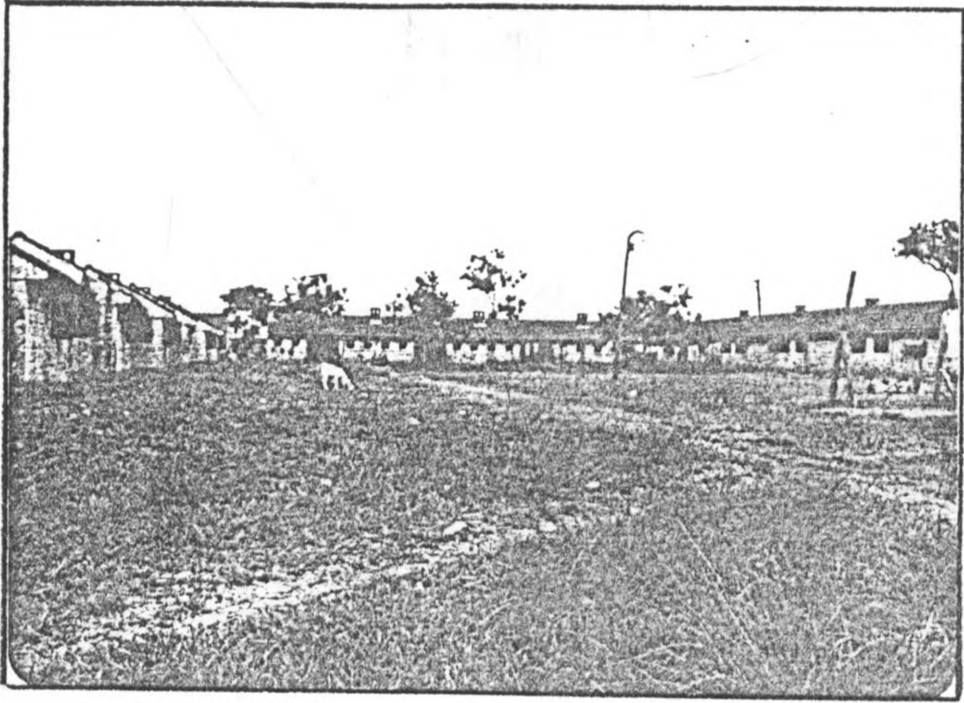
Shops, supermarkets and kiosks in the study area plus supermarkets within the city were chosen for the survey as the study population is likely to shop in these places.

### 3.7 Markets

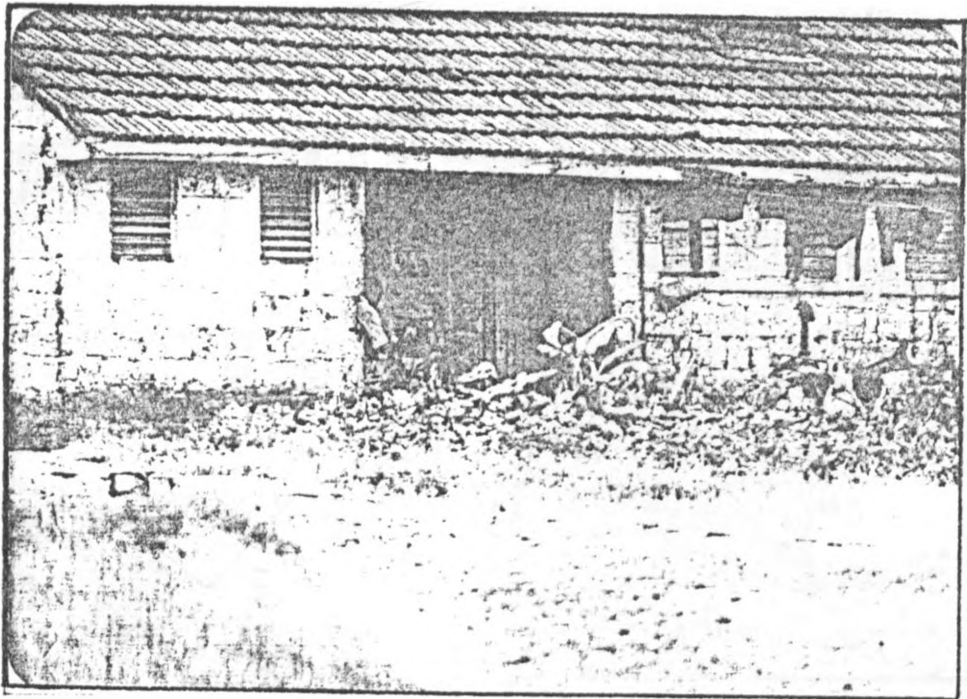
Prices of locally available natural foods were obtained from two major markets city commission markets within the city: one open air market (Gikomba) and one market in the residential area plus kiosks in the study area. Further details about the study area are found in map 1 and photographs A1, A2, B1 B2, C1, C2 on pages : 40, 41, 42 and 43.

FIGURE 1. STUDY AREA

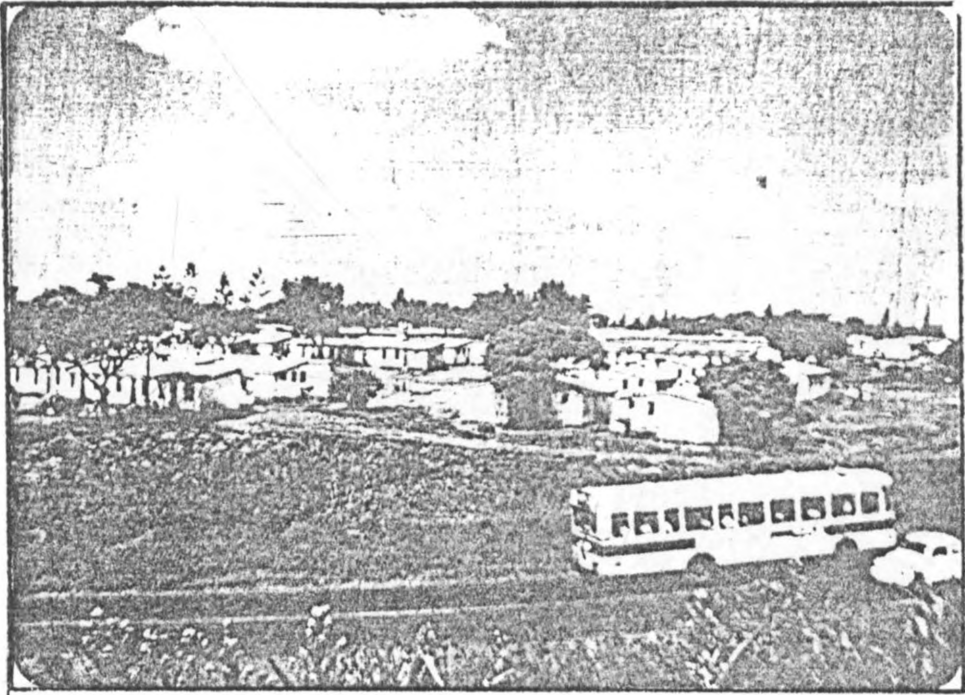




A<sub>1</sub> OFAFA KUNGUNI ESTATE (LOW-MIDDLE INCOME)



A<sub>2</sub> HOUSING UNITS IN OFAFA KUNGUNI



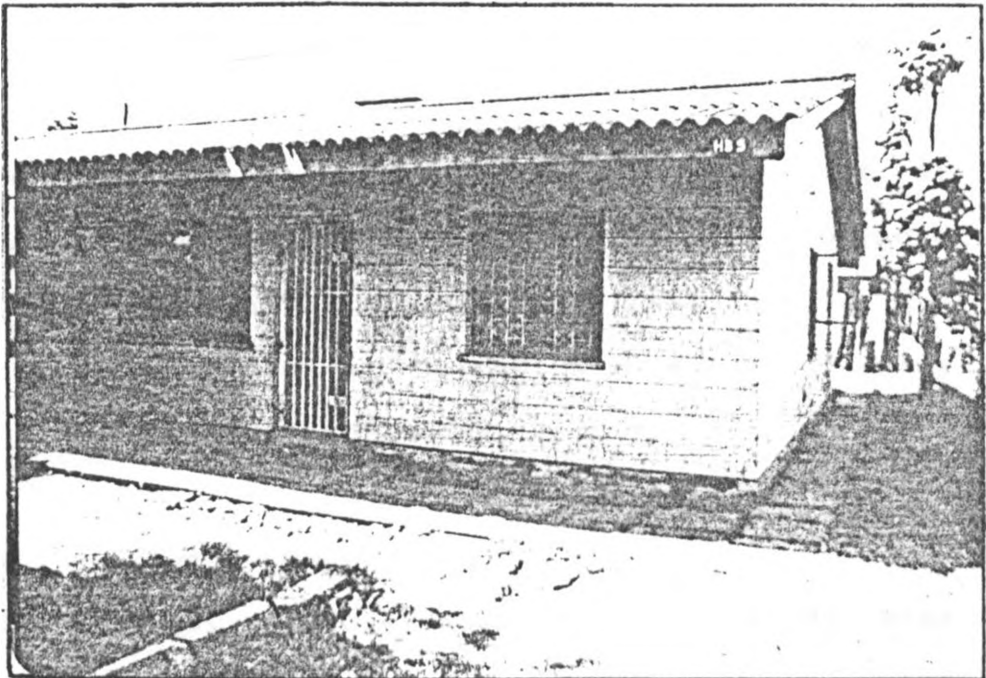
B<sub>1</sub> UHURU ESTATE (MIDDLE INCOME)



B<sub>2</sub> HOUSING UNITS IN UHURU



C<sub>1</sub> HARAMBEE ESTATE (UPPER MIDDLE INCOME)



C<sub>2</sub> HOUSING UNITS IN HARAMBEE



## CHAPTER IV

### RESEARCH DESIGN AND METHODS

#### 4.1 Study Design

Data were obtained from households, shops, supermarkets, markets and kiosks. Two enumerators who were trained and supervised by the researcher, assisted with data collection. The study was conducted using the following methods :

##### 4.1.1 Households Survey

A cross-sectional study of families living in Makadara division of Nairobi was carried out using a questionnaire found in appendix N. Information on socio-economic status and consumption of HPP were obtained.

##### 4.1.2 Supermarkets, Markets, Shops and Kiosks Survey

To determine the prices and nutrient content of HPP and the average prices of locally available foods, supermarkets, shops and kiosks both in the residential area and Nairobi were surveyed using forms in appendix O and P.

##### 4.1.3 Dietary Survey

The variety of foods consumed in the study area

were determined using a questionnaire previously administered in the in the household survey but with an additional dietary survey form as found in appendix Q.

#### 4.2 Study Population

A sample was drawn from middle-income families living in Makadara division of Nairobi and three estates (Harambee, Uhuru and Ofafa Kunguni) were randomly selected. The household was the unit sampled in the study.

All the major supermarkets in Nairobi, shops and kiosks in the residential areas who were stocking the health promoting preparations were sampled and surveyed. The average prices and nutrient content of HPP (as indicated on the labels) were determined.

Markets in Nairobi and the residential areas were sampled and the average prices of locally available foods which may be compared to HPP determined.

4.2.1 Population Selection/Sampling

(Determination of sample size)

Households

The sample size of the study population was pre-determined before the investigation using the formula:-

$$n = \frac{z^2(p.q)}{r^2}$$

where: z= desired confidence limit.

p= proportion of the families consuming HPP.

r= the precision of the risk of allowable error.

q= proportion of families not consuming HPP.

p = 50%

r = 7%

z = 1.96

q = 1-p = 1 - 0.5 = 0.5

therefore:

$$n = \frac{(1.96) \times 0.5 \times 0.5}{(0.07)^2} = 196$$

Because this is a subject which has not been wide-

ly investigated (particularly in less industrialized countries), it was assumed that 50% of the families may be consuming health promoting preparations (HPP).

The sample size for the study was calculated to be 200 households. Forty households were added to the sample for response refusals and possible unavailability of the respondents (Kearl, B. 1976).

An additional sample of 30 households were surveyed to determine the dietary habits of the study population, resulting in a total sample size of 270 households. In the study, an open-ended questionnaire on the consumption of HPP was used; the respondents were asked to give the types of preparations purchased (no list given). However, to ensure that there was no under-reporting, a closed ended questionnaire on the use of HPP was administered (respondents were given a list of preparations as indicated in appendix R). A sub-sample of 81 households were randomly selected and used in this survey.

#### 4.2.2 Sampling

Stratified, and systematic random sampling methods were used. A list of all the estates in the

division was obtained. The estates were divided into three socio-economic groups i.e. upper middle income, middle income and low middle income families. One estate was randomly selected from each of the categories. Harambee, Uhuru and Ofafa Kunguni estates represented upper middle income, middle income and low middle income families respectively. This classification was based on information from the City Commission and the local administration.

To determine the number of households to be sampled in each of these estates, a list of all the households in the estates of study were obtained from the City Commission. Using proportionate sampling, the number of houses to be sampled from each of the estates was determined. From Ofafa, Uhuru and Harambee clusters, 92, 95 and 53 households were respectively sampled.

The sampling interval was calculated to be 15. Using systematic sampling, every 15<sup>th</sup> household was sampled. The starting number was determined by listing numbers 1-15 on pieces of paper putting them in a hat and randomly selecting one number. In this case, 8 was selected to be the starting number.

#### 4.2.3 Dietary Survey

For the dietary survey, 30 households were sampled from the study area using the sampling methods that had been used before (systematic random sampling).

#### 4.2.4. Validation Study

Eighty one households were randomly selected and re-surveyed. In this survey, it was necessary that the sampled households had the previous occupants. In cases of changes, (new occupants as the case was with four households), the next household on the list was sampled. (this was to verify the previous results on the consumption of HPP using the open-ended questionnaire).

#### 4.2.5 Shops, Supermarkets and Kiosks survey

As the study population is likely to shop in Nairobi and the residential areas, all the major supermarkets in Nairobi and the shops and kiosks stocking products of interest in the study area were surveyed. Data was collected from 12 supermarkets in Nairobi, one supermarket in the residential area, 12 shops in the study area and 7 kiosks which were representatively sampled.

#### 4.2.6 Marketing survey

One major market in the residential area, and three other markets (city market, Wakulima and Gikomba) were sampled and average prices of local foods obtained. This was compared to the prices of HPP. Ten kiosks or roadside vendors selling the local foods in the study area were surveyed.

### 4.3. Specific Research Activities

#### 4.3.1 Data Collection

Data collection was carried out between December 1986 and June 1987. The sampled households were visited and data on consumption of HPP and socio-economic status obtained by means of a questionnaire. In order to ensure reliability, the adult member of the household was interviewed. Revisits to some of the households were made whenever necessary to collect data. This was more so in cases where the respondent was either absent (house closed) or no adult member of the family available at the time of the visit.

In the majority of the households, the owners were at work during the day. These households had to be covered in the evenings or during weekends. This required considerable effort and was also time

consuming.

The re-sampling of 81 households followed the completion of the main survey. Only data on consumption of HPP using the open-ended questionnaire was obtained as information on socio-economic status was already available from the initial interview.

Having determined what is consumed in the households in terms of HPP, supermarkets, kiosks and shops were surveyed. Information on sizes, prices and nutrient content as indicated on the labels was obtained by observing and questioning the shop managers or attendants.

Data on prices of locally available foods were obtained on weekly basis throughout the survey period so as to obtain the average prices of the the foods.

#### 4.3.2 Data Cleaning

Survey forms were checked every evening to ensure completeness and correctness. However, major data cleaning was done at the end of the survey. Where necessary, the missing data were obtained and corrections made.



#### 4.3.3 Data Analysis

A total of 270 households (100% sample) were included. For the reliability check, 70 households (33.1%) of the sample were re-surveyed. For the descriptive analysis, all questionnaires have been used. However, for the analytical analysis, only households found to be consuming one or more of the preparations have been utilized. All the households covered in the reliability check have been used in comparing the two methods of administering the question on consumption of HPP.

Three main forms of data were obtained for this study. Household data on socio-economic status and consumption of HPP, dietary data and data from the shops, supermarkets, markets and kiosks. The dietary data, data on nutrient content and prices of HPP and prices of locally available foods have been handled manually. The household data were entered into the computer using Dbase III programme and analyzed using SPSS/PC programme.

## CHAPTER V

### ORGANIZATION OF RESEARCH ACTIVITIES

#### 5.1 Planning

##### i) Project Proposal

The study began with the identification of the research topic(s) and the study area which was part of the project development course.

##### ii) Initial Preparation

Upon receiving the research permit, the initial questionnaire preparation began. Materials for the survey were purchased and research assistants identified (these were form four leavers who had previously participated in household surveys).

The district officer of the study area was contacted and several meetings were held with the local leaders in the area. During these meetings, the information pertaining to the division was obtained. For example, it was possible at that time to gather information on the size of the population, health facilities, social amenities and the classification of the estates within the division into the various socio-economic groups. The chiefs of the area assisted in physically

identifying the division boundary and the various estate boundaries.

iii) Piloting

With the initial survey forms ready, a pilot survey was undertaken for 10 days using a 10% sample of households not included in the proposed study. The pilot study determined whether the questionnaire needed modifications. The questionnaire was reviewed and modified accordingly. Some of the questions were rephrased and others left out.

iv) Training Research Assistants

The research assistants were trained for one week. This involved going through the questionnaire for clarity and explanation of certain concepts and the aim of the survey. During the training, standardization was taken into consideration so that the assistants administered the questionnaire the same way. This was achieved by having each assistant administer the questionnaire independently (in households not included in the sample) and comparing their responses. Personality and good relationship was also emphasized during the training.

v) Sampling

Using the research methods outlined previously, the required number of households were sampled and numbers written on the doors for easy identification.

5.2 Data Collection

The data collection phase began at the end of December 1986 and was completed in June 1987. The data were collected in the following stages :

i) Households survey

Households were visited and information on consumption of HPP and socio-economic status obtained by interviewing the respondents.

ii) Dietary Survey

In order to determine the dietary habits of the study population, a dietary recall survey was carried out in 30 households.

iii) Shops, Supermarkets and Kiosks survey

Shops, supermarkets and kiosks were surveyed to establish the range of preparations available to the consumers and the nutrient content and prices of the preparations consumed by the study population.

iv) Market's survey

Markets were surveyed throughout the study period and prices of locally available foods obtained.

v) Validity Study

In May 1987, 81 households were randomly selected from the original sample and a reliability check undertaken.

5.3 Data Cleaning and Analysis

Having completed the collection of data, they were cleaned, coded and prepared for analysis.

5.4 Problems Encountered

5.4.1 Households

Cooperation was easily obtained from the respondents after explaining the questionnaire and the objectives of the survey. However, data collection took longer than expected due to the following reasons :

- 1) It was not possible to find all the respondents at home at the time of the visit; several visits had to be made to some of the households before obtaining the necessary information.

ii) A limited number of households were covered each week as most of the adult family members went to work during the day and were only available in the evenings and weekends.

iii) Public transport was used during the survey and this resulted in much time being wasted.

#### 5.4.2 Validity Study

The initial survey was carried out between December 1986 and March 1987 whereas the validity study was undertaken between April and June 1987. Changes that might have occurred over time may affect the data collected then.

#### 5.4.3 Manufacturers, Shops and Supermarkets

On the whole, the manufacturers of the HPP were very uncooperative. Initially, all possible manufacturers of HPP i.e. Ribena, Glucose, Treetop were contacted. Only two manufacturers out of 30 (6.6%) responded and indicated that they did not have the information which was requested. The researcher was only able to visit two manufacturers. Nevertheless, it was not possible to get more information or verification of the nutrient content as indicated on some of the labels. Therefore it was necessary to rely on information

as indicated on the labels, information which was largely inadequate. Difficulties arose in attempting to make comparisons of the preparations (whose nutrient content was not indicated) with locally available natural foods.

## CHAPTER VI

### RESULTS

#### 6.0 Introduction

The results of the present study are presented under the following headings: Characteristics of the study population, Consumption of HPP, and Association between the use of HPP and various socio-economic factors and comparison of the cost and nutrient content of HPP to locally available natural foods.

A total 270 households were surveyed. Of these, 240 (88.8%) households had information only on socio-economic variables and the consumption of HPP. The remaining 30 households had similar information with additional dietary information. All the households have been used in the analysis and presentation of these results.

As hypothesized, the three clusters of study differed with respect to education, occupation expenditure and income distribution of the heads of households. Hence, Ofafa, Uhuru and Harambee estates are referred to as low-middle income, middle-income and upper-middle income clusters respectively. Although the consumption of HPP did



not reveal any substantial differences in the three clusters of study, the low income cluster (Ofafa) had less consistent consumers as illustrated in Tables 16 and 17.

## 6.1 Characteristics of the study population

### 6.1.1 Age and sex of the household heads

Out of 270 household heads, 84.1% were males and the rest, 15.9%, were females. As indicated in Table 4 almost 50% of the household heads were between 30-39 years. The population is dominated by young (17.8%) and middle aged (48.9%) persons.

Table 4. Age distribution of the household heads

Age groups (years)	n	%
20-29	48	17.8
30-39	132	48.9
40-49	62	23.0
50+	28	10.4
Total	270	100.

### 6.1.2 Household size

The size of the household ranged from one member to 13 members with a mean household size of 4.89 persons. This is slightly higher than the mean household size of 4.2 for Nairobi (Central Bureau of Statistics 1979). The difference may be due to changes over time, sample size or nature of the sample. The majority of the households (54.4%) had 5 or more persons as shown in Table 5. The difference in the household sizes between the clusters was found to be significant at  $p < 5\%$

Table 5. Distribution of household size by cluster

Household Sizes	Ofafa n=102 %	Uhuru n=105 %	Hara. n=63 %	NO	Total n=270 %
1-2	19.6	25.7	6.3	51	18.9
3-4	22.6	30.5	27.0	72	26.7
5+	57.8	43.8	66.7	147	54.4

### 6.1.3 Education of the household heads

Four categories of levels of education were used. This was based on the number of years of school one had completed. All the household heads had

some formal education. The majority of the household heads (63.7%) had attained secondary education. All the household heads in the low-income cluster had attained primary and secondary levels of education whereas those who had attained higher levels of education (university) were found in the upper middle income cluster (Harambee) as shown in Table 6.

Table 6. Education level of the heads of household by cluster

Education levels	Ofafa n=102 %	Uhuru n=105 %	Hara. n=63 %	Total NO	%
Primary	43.1	16.2	-	61	22.6
Secondary	56.9	75.2	55.6	172	63.7
University	-	8.6	44.4	37	13.7

#### 6.1.4 Occupation

All household heads had some form of occupation as indicated in Table 7. In cases of retirement, as it was in five cases, the previous occupation was recorded. More than half (54%) belonged to the category of lower professionals and skilled work-

ers. Most of the household heads in the higher professional category (61.9%) were found in the upper middle income cluster.

Table 7. Occupations\* of the household heads  
by cluster

Occupation	Ofafa	Uhuru	Hara.	Total	
Categories	n=102	n=105	n=63	n=270	
	%	%	%	No	%
<hr/>					
Unskilled					
e.g. (casuals)	8.8	21.9	-	32	11.9
Semi-skilled	5.6	30.5	-	38	14.1
Skilled	19.6	14.3	1.6	36	13.3
Lower					
professionals	54.9	29.5	36.5	110	40.7
Higher					
professionals	10.8	3.8	61.9	54	20.0
<hr/>					

\*The classification in Table 7 is based on one suggested by Abramson (1984). However, the classification was devised to suit occupations within the country.

6.1.5 Income of the Household heads

The household heads were asked to give an estimate of their total household monthly income. The average monthly income for all the clusters was KSh 3,333. The majority of the households (53.7%) had monthly incomes between 1,000 KSh and 3,999 KSh. Mean incomes for Ofafa, Uhuru, and Harambee were 1616, 3198 and 6413 KSh respectively. The mean incomes for the three clusters differed which confirms the assumption that the residents of the three areas were of different socio-economic groups. Table 8 shows the distribution of income by clusters.

Table 8. Household monthly income by cluster

Income groups	Ofafa n=102	Uhuru n=105	Hara. n=63	Total n=270
KSh	%	%	%	%
0- 999	26.5	6.7	3.2	13.3
1000-1999	47.0	15.2	-	23.7
2000-2999	17.6	22.9	1.6	15.9
3000-3999	5.9	25.7	9.5	14.0
4000-4999	1.0	18.0	15.9	11.2
5000+	2.0	11.4	69.8	21.9

#### 6.1.6 Monthly household expenditures

Respondents were asked to give their average monthly expenditure on house rent, electricity, water, cooking fuel, food, clothing, transport, school fees, stationery, loan and insurance payments. This was calculated to be the total monthly expenditure. Table 9 shows the distribution of monthly expenditure by cluster. More than half of the households spent between 1,000 KSh and 3,999 KSh per month. The proportion of those spending more than 2,000 KSh is slightly higher than those who earned it (according to income findings). This may be due to the fact that most people find it easier to discuss their expenditures than their income. Monthly expenditures may therefore give a better estimate of the monthly incomes. However, there may be chances of overstating expenditures. Most of the middle-income and upper middle-income households had monthly expenditures of over 3,000 kSh. The mean monthly expenditure for Ofafa, Uhuru and Harambee clusters was 1202, 2510 and 3902 KSh respectively. The mean monthly income of KSh 3333 is slightly lower than the mean monthly expenditure of KSh 3456.

Table 9. Distribution of monthly expenditure  
by cluster

Expenditure groups KSh	Ofafa Uhuru Hara.			Total	
	n=102 %	n=105 %	n=63 %	n = 270 No	%
0- 999	14.7	1.9	-	17	6.3
1000-1999	45.0	14.3	1.6	62	23.0
2000-2999	21.6	18.0	4.8	44	16.3
3000-3999	13.7	22.9	9.5	44	16.3
4000-4999	3.0	14.3	30.1	37	13.7
5000+	2.0	28.6	54.0	66	24.4

6.1.7 Monthly expenditure on food

Household heads were asked to state the average monthly expenditure on food. Most of the households (85.9%) spent at least over 1,000 KSh on food. Compared to other monthly household expenses, food was found to take a substantial portion of their incomes. The mean monthly expenditure on food for Ofafa, Uhuru and Harambee clusters was 1363, 908 and 1310 KSh. Table 10 shows the distribution of monthly expenditure on food.

Table 10. Distribution of monthly expenditure on food by clusters

Monthly Expenditure catg. KSh	Ofafa n=102 %	Uhuru n=105 %	Hara. n=63 %	Total n=270 No	%
0- 999	8.8	21.9	9.5	38	14.1
1000-1999	28.4	43.8	27.0	92	34.1
2000-2999	17.6	22.9	17.5	53	19.6
3000+	45.2	11.4	46.0	87	32.2

Although 70% of the households in Ofafa estate earned less than 3000 KSh per month, 45% of these households spent KSh 3000 and more on food. Compared with Harambee, households in Uhuru and Ofafa clusters spent a greater proportion of their monthly income on food as shown in Table 11.



Table 11. Proportion of monthly income spent on food

Food expenditure/monthly income	Ofafa n=102 %	Uhuru n=105 %	Hara. n=63 %	Total No %
1-19.99	16.7	19.0	49.2	68 25.1
20-29.99	12.7	12.4	27.0	43 16.0
30-39.99	20.6	11.4	14.2	42 15.5
40-49.99	19.6	14.3	4.8	38 14.0
50+	30.4	42.9	4.8	79 29.2

#### 6.1.8 Socio-economic status score

To determine the socio-economic status of the study population a socio-economic status score was computed from education, occupation, income, expenditure and number of persons per household. The minimum and maximum scores were 8 and 17 respectively. The majority of the households (62.7%) had between 10-13 scores. The mean score was 12.6. This revealed that this is a middle income population with most of the household heads having attained secondary level of education and therefore employed as skilled workers or lower professionals. Their household monthly income and expenditure

nditure lay between 2,000 and 3,999 .KSh, with household sizes of between 3-4 persons. The details of the various scores are given in Table 12.

Table 12. Socio-economic status score\* by clusters

Value of score	Ofafa Uhuru Hara.			Total	
	n=102	n=105	n=63	No	%
	%	%	%		
8	2.0	-	-	2	0.7
9	10.8	1.9	-	13	4.8
10	30.4	5.7	1.6	38	14.0
11	31.4	19.0	-	52	19.3
12	18.6	21.0	1.6	42	15.6
13	3.8	27.7	6.3	37	13.7
14	1.0	9.5	7.9	16	5.9
15	1.0	9.5	30.2	30	11.2
16	1.0	5.7	22.2	21	7.8
17	-	-	30.2	19	7.0

\*Each of the socio-economic variables was given a score. For example, those with higher education levels, occupation and income received high scores.

Cross-tabulations of socio-economic status score by area of residence revealed significant differences among the three clusters of study ( $P < 0.05$ ). These associations may lead to the conclusion that one's level of formal education determines his/her occupation, income, expenditure and socio-economic status and to some extent area of residence.

#### 6.1.10 Dietary

To determine the dietary habits and the variety of foods consumed by the study population, 30 households were randomly sampled and household heads were asked to give the various foods the family had taken the previous day (24 hour recall). The results are presented in Table 13.

Table 13. Frequency distribution of foods consumed  
by cluster  
(data from 24 hour diet recall)

Foods	Ofafa n=10	Uhuru n=10	Hara. n=10	Total n=30	%
Ugali	10	8	6	24	80.0
Bread	6	3	9	18	60.0
Rice	1	4	5	10	33.0
Potatoes (Irish)	6	1	3	10	33.0
Chapati	4	3	2	9	30.0
Porridge (white)	4	2	1	7	20.0
" (sorghum)	1	1	2	4	13.0
Weetabix	2	0	1	3	10.0
Potatoes (sweet)	0	2	1	3	10.0
Maize (used in beans)	1	0	1	2	7.0
Doughnuts	1	0	1	2	7.0
Sugar	10	7	8	25	83.0
Milk	8	6	8	22	73.0
Kimbo (cooking fat)	5	3	6	14	46.0
Blueband/butter	3	6	9	18	60.0
Cowboy	2	3	1	6	20.0
Meat	3	6	6	15	50.0
Eggs	2	5	6	13	43.0
Chicken	1	0	2	3	10.0
Beans	1	0	3	4	13.0
Peas	2	0	0	2	7.0
Sukumawiki (Kale)	8	4	4	16	53.0
Cabbage	3	2	5	10	33.0
Tomatoes	5	4	3	12	40.0
Carrots	7	1	1	9	30.0
Oranges	4	0	2	6	20.0
Ripe bananas	2	0	2	4	13.0
Mangoes	0	2	2	4	13.0
Pawpaws	1	1	3	5	16.0
Cowpea leaves	1	1	2	4	13.0
Pumpkin leaves	0	0	2	2	6.0

The majority of the households had three meals in a day. However, in households where family members were either away at work, school or college (36.6%) only two main meals were taken in a day (breakfast

and supper). As illustrated in Table 13, ugali (80%) was the main carbohydrate food. In nearly all the households, sugar (83%) was mainly used to sweeten tea and porridge occasionally. Milk (73%) was mainly used by children and in the preparation of tea. The fats and oils (46%) were used in the frying of food. Eggs (43%) and fruits (52%) in the diet were mainly given to children as most of the mothers indicated that they would be too expensive to purchase for the whole family. Fruits were purchased according to what was available during a particular season. Sukumawiki (Kale) (53%) was a popular vegetable. The results also indicate that most of the families prepare foods such as ugali (80%), rice (33%), potatoes (33%), which consume less energy (fire) as compared to other foods such as maize (7.0%) and beans (13%). The diet variation increased with income groups i.e. the consumption of bread, butter/ blueband, meat, eggs and rice was higher in estates of higher socio-economic status (Uhuru and Harambee clusters). For example, of all the households consuming eggs, 15.3%, 38.4 % and 46.1% were found in Ofafa, Uhuru and Harambee clusters respectively.

\* Dietary survey was not a primary objective of the study but an explanatory survey to determine the

dietary habits of the study population . The reaser-  
cher is aware of the small sample size.

## 6.2 Consumption of HPP

### 6.2.1 Types of Health Promoting Preparations Accessible to the consumer

Ninety three different commercial combinations of vitamins, minerals, proteins and energy products in the form of drinks, syrups, tablets and powders were found to be available on the market. Of these, 25% were imported and the rest produced locally. All the sampled shops and supermarkets stocked two or more HPP. Several similar products had different brand names due to different manufacturers. A list of the preparations available on the market is found in appendix E.

### 6.2.2 Types of preparations consumed

Information on the types of preparations consumed by the households was obtained using an open ended question as outlined in the methodology. The majority of the sampled households (82.3%) consumed HPP. Fifty three percent of these households consumed two or more products. Table 14 shows the frequency distribution of number of HPP consumed by cluster.

Table 14. Frequency distribution of the number of HPP consumed by cluster

Location	No of HPP consumed				
	0	1	2	3	4+
	n=48	n=77	n=97	n=36	n=12
	%	%	%	%	%
Ofafa	29.2	36.3	35.2	52.8	58.3
Uhuru	47.9	49.3	35.0	16.6	29.2
Harambee	22.9	14.4	29.8	30.6	12.5

Of the households consuming four HPP or more, only 12.5 % were found in Harambee estate as illustrated in Table 14. The total number of HPP by the proportion of income spent on HPP was found to be significant at 5 % level.

Seven groups of HPP were consumed more frequently. The consumption of HPP was slightly low in the upper middle income cluster (Harambee) as shown in Table 15.

Table 15. Distribution of frequently consumed HPP  
by cluster

Location	Sq. n=270 %	Co. n=270 %	Ri. n=270 %	Gl. n=270 %	F1. n=270 %	Lu. n=270 %	Mu. n=270 %
Ofafa	20.0	18.8	13.3	12.5	10.0	5.9	3.7
Uhuru	24.8	16.2	14.4	16.2	11.2	9.6	3.5
Harambee	8.1	8.1	8.1	6.7	7.8	5.6	5.8
Total	52.9	43.1	35.8	35.4	29.0	21.1	13.0

### 6.2.3 Use of preparations within the last month

Respondents were asked whether they had used each of the mentioned HPP in the last month of the survey . As can be shown from Tables 15 and 16, there was a difference between the total number of users and those who had used the products within the last month (consistent consumers). The difference may be due to the households that had previously indicated using the preparations occasionally. As illustrated in these tables, Ofafa seems to have less consistent consumers compared to Uhuru and Harambee clusters. This may suggest that



although households in this cluster (low middle-income) may desire to consume these products, they are unable to buy them consistently:

Table 16. Consumption of HPP within the last month  
by cluster

Loc.	Sq.	Co.	Gl.	Ri.	Fi.	Lu.	Mu.
	n=270	n=270	n=270	n=270	n=270	n=270	n=270
	%	%	%	%	%	%	%
Ofafa	12.2	12.9	7.0	13.4	10.0	5.9	4.8
Uhuru	18.5	10.7	13.4	14.5	11.2	9.6	4.8
Harambee	7.4	7.8	6.7	8.1	7.8	5.6	2.5
Total	38.1	31.4	27.1	36.0	29.0	21.1	12.1

#### 6.2.4 Reliability check

To ensure that there was no under-reporting on the preparations consumed, a closed ended question (list given) on the consumption of HPP was administered. Comparison of information from both surveys (closed and open ended) showed no difference because on average, over 90% of those sampled agreed with the original questionnaire as illustrated in the following table.

Table 17. Results of the reliability survey

(n=70)

---

Responses	Ri.	Lu.	Gl.	Sq.	Fi.	Co.	Mu.
	%	%	%	%	%	%	%
Agree	94.0	93.0	91.4	88.5	93.0	85.0	90.0
Disagree	6.0	7.0	8.5	11.4	7.0	14.0	10.0

---

The slight differences may be due to changes which might have occurred over time as the initial survey was carried out between December 1986 and March 1987 whereas the 2nd survey took place between April and June 1987. As a result of this, changes may have occurred in household composition, respondents attitudes, child's age and availability of certain products.

#### 6.2.5 Frequency of buying

Families consuming HPP were further asked to state how often they purchased each of the preparations. Most of the households purchased the preparations on monthly basis and most of the users had used the products for more than 12 months as illustrated in appendix J.

#### 6.2.6 Sizes and prices of frequently consumed HPP

There was a slight difference in the prices of the various preparations. The sizes and mean price of the frequently consumed HPP is given in appendix F. For preparations which were sold in two sizes (medium and large) the medium size was often preferred .

#### 6.2.7 Sources of Information about the HPP

Data regarding sources of information about the HPP were recorded for each of the preparations. For most of the products, the mass media particularly the radio was found to be an important source of information. Hospitals and clinics were also found to be important sources of information for the users of Ribena Lucozade and Glucose as shown in Table 18. This may be an indication of the influence of marketing and promotion strategies of the manufacturing firms.

Table 18. Distribution of the sources of information for each of the preparations

Source of information	Sq. n=143 %	Co. n=124 %	Ri. n=97 %	Gl. n=96 %	Fi. n=78 %	Lu. n=57 %	Mu. n=35 %
Radio	41.2	50.8	44.3	29.2	38.5	47.4	8.6
Television	4.2	2.4	10.3	8.3	8.9	7.0	-
Newspapers	5.6	5.6	5.2	13.5	3.9	5.6	17.1
Hospital	5.6	4.9	20.6	25.0	19.2	21.0	8.6
Friends	25.2	14.6	12.6	11.4	19.2	10.5	37.1
Seen in store	18.2	21.7	7.2	12.5	10.3	8,8	28.6

#### 6.2.8 Users of HPP in the households

Information was also obtained on household members consuming each of the preparations. The results indicate that most of the products were used by children. However, Chocolate products and Treetop were mainly used by the whole family. Table 19 shows users of each of the products.

Table 19. Distribution of the users within the households

Users of	Sq.	Co.	Ri.	Gl.	Fi.	Lu.	Mu.
	n=143	n=124	n=97	n=96	n=78	n=57	n=35
HPP	%	%	%	%	%	%	%
Children	38.5	5.6	63.9	53.2	88.5	45.6	91.4
Whole family	44.0	79.0	18.6	27.0	10.3	33.4	5.7
H/household	10.5	11.3	12.4	17.7	1.2	10.5	2.9
Other	7.0	4.1	5.1	2.1	-	10.5	-

#### 6.2.9 Stated reasons for use of HPP

Households that used HPP were asked to give reasons that made them buy each of the preparations. The reasons varied from product to product although the reasons given for Ribena and Treetop use were almost similar. Appendix I illustrates the various reasons given for the use of each of the products. The reasons cited are in line with what is indicated on labels or the information given in advertisements. The results show that the preparations are mostly taken for supplementary purposes and general health promoting effects.

### 6.3 Association between use of individual products and socio-economic status

Chi-square test was used to determine whether there was any relation between the consumption of each of the preparations and the various socio-economic variables (education, occupation, income and expenditure). The results showed no significant association except for the slight association between occupation and the consumption of Ribena, location and the consumption of Glucose and Squash (Treetop)

Analysis of variance using socio-economic status score income and users versus non users of HPP showed no significant relationship except for the consumption of Squash (Treetop) and Glucose as illustrated in appendix K and L.

#### 6.3.1 Expenditure on preparations

Information on sizes and frequency of buying each of the preparations was used in determining the total household expenditure on preparations. The majority of the consumers (53.4%) spent between 70-169 KSh on preparations. Table 20 and Figure 2 show these expenses. The mean monthly expenditure on HPP for Ofafa, Uhuru and Harambee clusters was 69.8, 60.2 and 74.5 KSh respectively.

Table 20. Household expenditure on preparations by cluster

Expenditure in KSh	Ofafa	Uhuru	Harambee	Total	
	n=102	n=105	n=63	n=270	
	%	%	%	No	%
0	13.7	21.9	17.4	48	17.8
1- 69.99	13.7	14.3	17.5	40	14.8
70- 99.99	14.7	18.2	12.7	42	15.6
100-169.99	44.1	28.6	42.9	102	37.8
170+	13.8	17.1	9.5	38	14.0

# HOUSEHOLD EXPENDITURE ON HPP

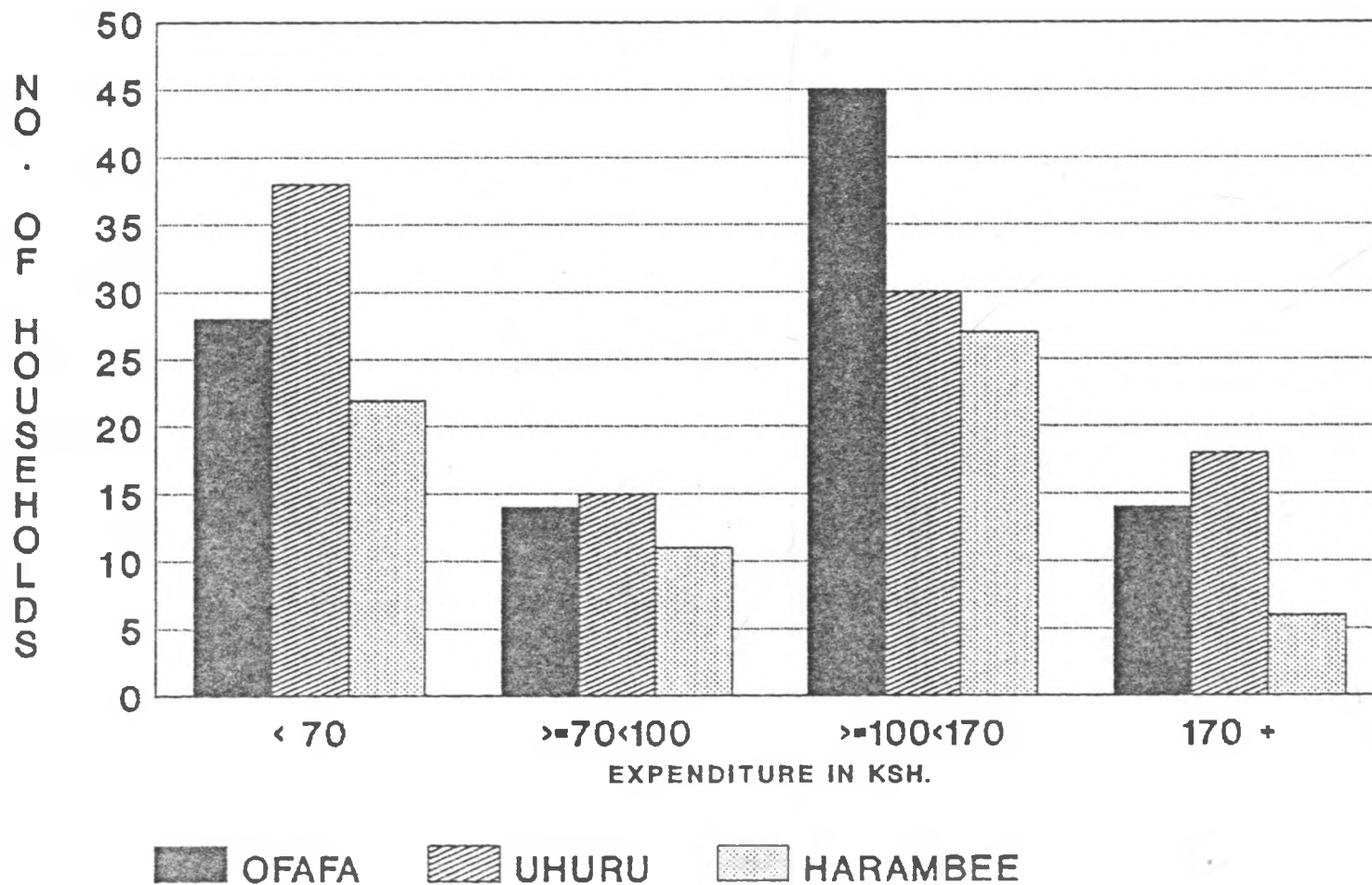


FIGURE 2



On the whole, the expenditure on preparations was substantial compared to other household expenditures. Tables 21 and 22 and figures 3 and 4 show the expenditure on preparations as a percentage of the total monthly food expenditure and total monthly income. The amount is substantial especially among low income families such as those found in Ofafa and Uhuru clusters.

Table 21. Proportion of monthly food expenditure spent on HPP

% expenditure on HPP/food expenditure	Ofafa	Uhuru	Harambee	Total	
	n=102	n=105	n=63	n	%
	%	%	%	No	%
0	13.7	21.9	17.4	48	17.8
1- 5.99	19.7	2.9	25.5	39	14.5
6- 9.99	19.6	24.8	27.0	63	23.4
10-19.99	29.4	31.4	19.0	75	27.7
20+	17.6	19.0	11.1	45	16.6

The majority of the households in Ofafa and Uhuru clusters (low and middle income) spent between 10-20% of their monthly food expenditure on HPP

whereas households in Harambee estate spent less as shown in Table 21.

Table 22. Proportion of monthly income spent on HPP by cluster

% expenditure on HPP/monthly income	Ofafa	Uhuru	Harambee	Totals	
	n=102 %	n=105 %	n=63 %	No	%
0	13.7	21.9	17.4	48	17.8
1-1.99	12.0	1.0	49.3	41	15.1
2-3.99	29.1	22.0	25.3	70	25.9
4-9.99	39.0	41.0	4.8	87	32.3
10+	6.2	14.1	3.2	24	8.9

Households in Uhuru and Ofafa clusters spent greater proportion of their monthly income on HPP.

## EXPENDITURE ON HPP AS % OF THE HOUSEHOLD MONTHLY INCOME BY CLUSTER

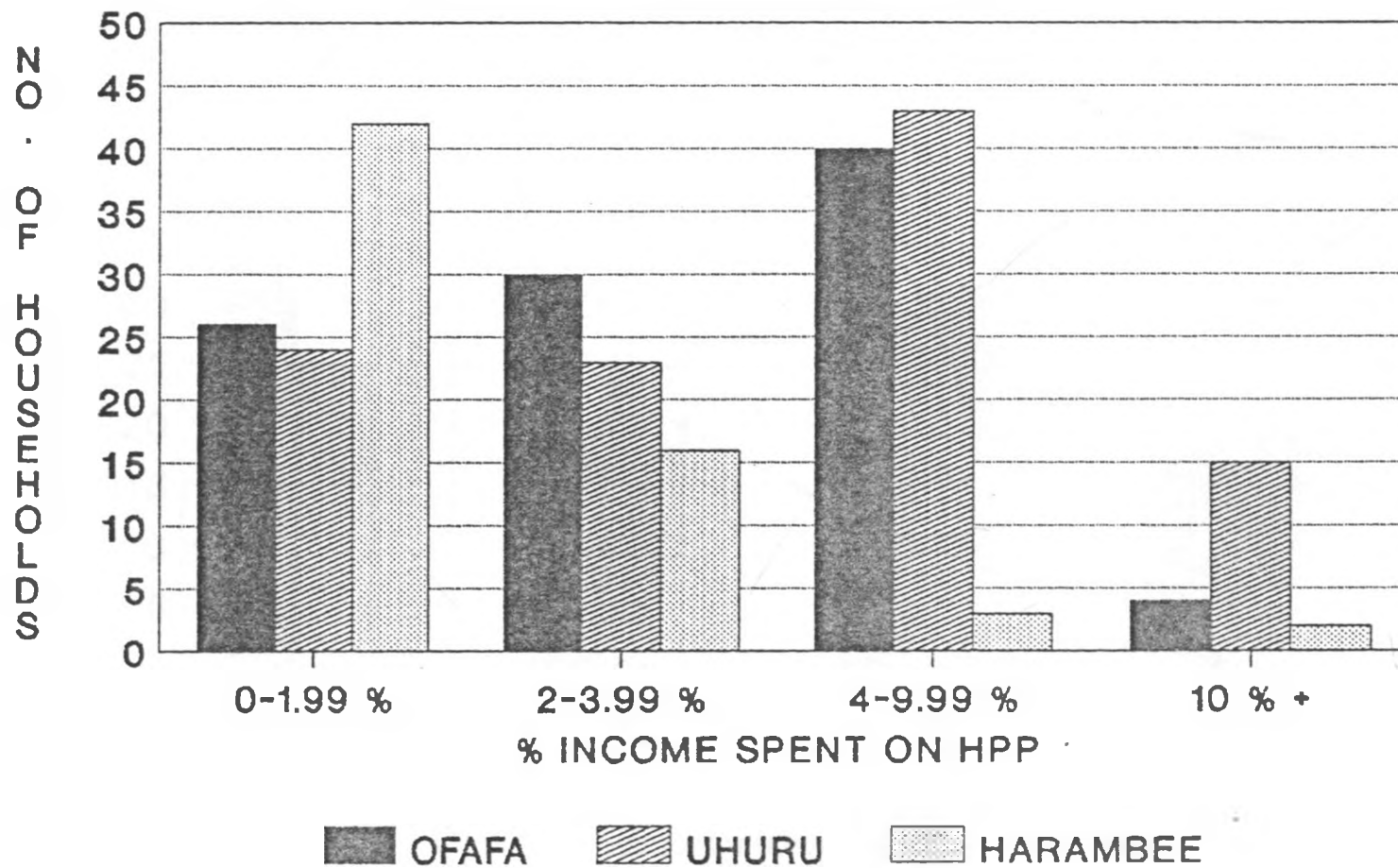


FIGURE 3

# EXPENDITURE ON HPP AS A PERCENTAGE OF THE HOUSEHOLD'S MONTHLY FOOD EXPENDITURE BY CLUSTER

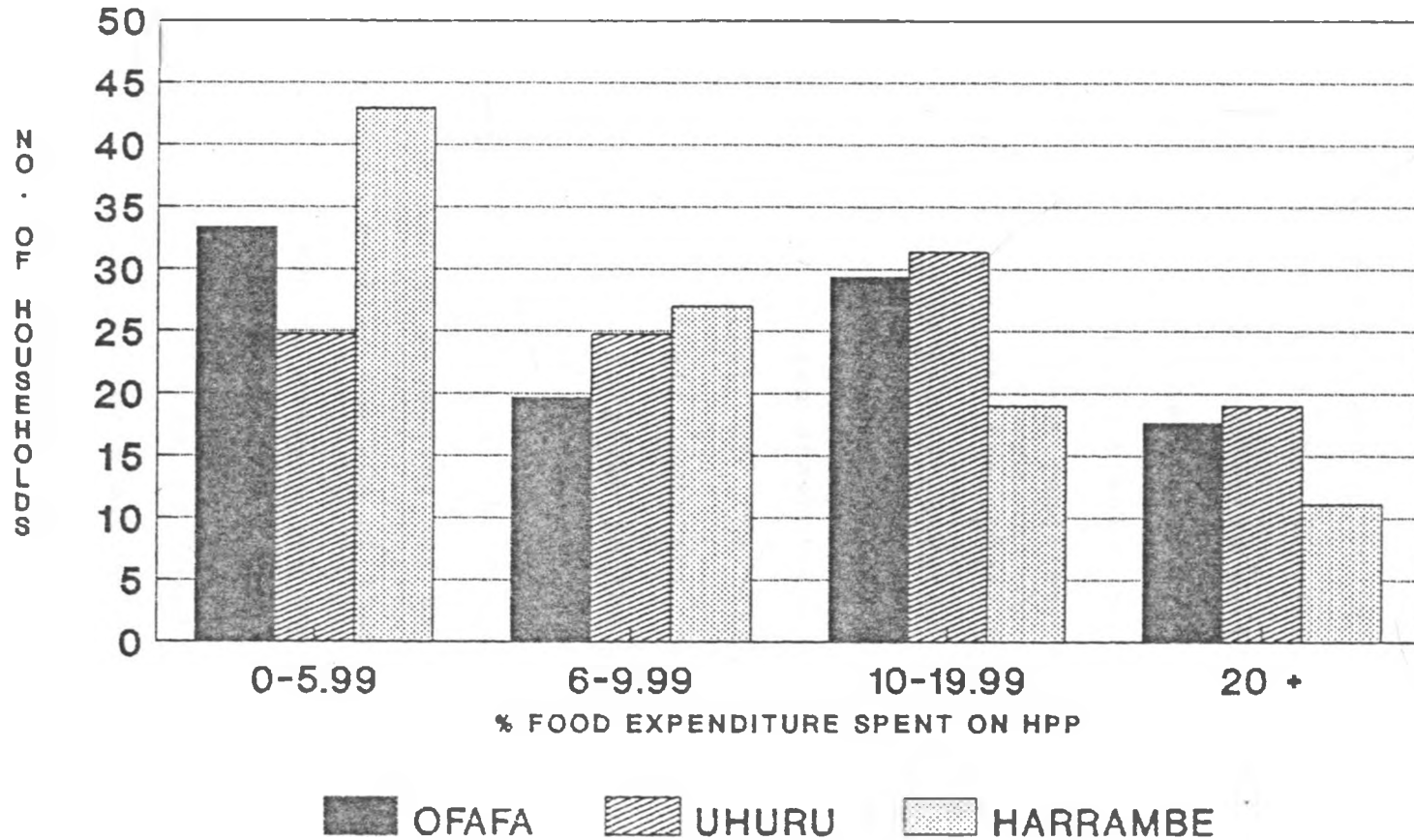


FIGURE 4

7.4 Comparisons of the cost of HPP to the cost of locally available Natural foods

Food beverages, such as Cocoa, Nescao, Milo, Bour-nivita, Ovaltine and Drinking Chocolate were mentioned as HPP by 49.5% of the sampled households, therefore, they may be considered part and parcel of the daily diet of these families. These beverages are nutritious and likely to improve or promote the health of these families. For example, apart from Ovaltine, all the other products are Cocoa based and Cocoa powder contains 429 calories, 20g protein, 25g fat 14.3 mg of iron per 100g. In most cases, the beverages are not taken plain but added to milk. The list of the frequently consumed beverages and their nutrient content (as found on the labels), is given in the appendix H.

On the other hand, some of the preparations considered to be health promoting may be unnecessary and costly in meeting the RDA of these families. An attempt was made to compare the cost of some of the nutrients provided by preparations (as indicated on label), to the cost of locally available natural foods that provide similar nutrients.

The cost of the local foods was based on prices obtained on weekly basis from markets within the

city and the residential areas (prices collected throughout the whole period of the survey). The foods chosen were among those frequently consumed by the study population (dietary data).

Whereas it may not be possible to make generalizations from these comparisons because both the preparations and the comparable natural foods provide more than one nutrient for the given cost. It is rather striking that it would cost approximately KSh 20.50 and 66.00 to provide 820 and 3000 calories (the RDA for a child less than a year old and a moderately active adult man). To obtain similar amounts of nutrients from maize flour, would cost approximately KSh 0.82 cents and 3.00, respectively. Table 23 shows these comparisons.

Table 23. Comparison of the cost of HPP to the cost of locally available natural food

Cost per recommended dietary allowances of HPP

Preparation	Nutrient	Nutrient/ Unit	RDA	Cost/RDA KSh
Black currant health drink (similar to Ribena)	Vit. C	0.70 mg	20mg children	1.16
		*(20mg Vit C/28.3g)	30mg adults	1.74
Orange squash (Heyho)	"	0.66mg	"	0.64
		(20mg Vit C/30ml)		0.96
Glucolin black currant	"	0.5mg	"	3.50
		(50mg Vit C/per 100g)		5.25
Seven Seas	Vit. A	700 I.U (7000I.U/ 10ml)	2000 I.U Infants 6-12 months children 1-3 years)	0.40
Multivite	"	0 I.U (100 I.U/ 5ml)	"	14.0
Seven Seas	Vit. D	80 I.U 800 I.U/ 10ml)	approx. 400 I.U growing children adolescents pregnant & lactating women	0.80
Multivite	"	40 I.U (200 I.U/ 5ml)	"	1.20
Glucolin (plain)	calories	3.4 Cal.	820 Ca. children	18.04
		(340 Cal. /100g)	<1 year 3000 cal. adultman	66.00
Glucolin black currant	"	3.7 cal. (350 cal.	"	20.50

		/100g)	"	75.00
Lucozade (glucose drink)	"	0.679 cal. (67.9 cal. /100g)	"	57.40 210.00
Minadex	Iron	2.4 mg (12mg of iron /5ml)	5-10mg children <1 year to 9 years	2.80

\* nutrient content as found on labels.

Cost per RDA of the Comparable Natural Food

Comparable Natural foods	Nutrient	Nutrient/ Unit	Cost/RDA KSh
Citrus fruits (oranges)	Vit. C	0.45 mg (45mg Vit. C / 100g)**	0.70 1.05
Pawpaws	"	0.5 mg (50mg Vit. C / 100g)	0.36 0.54
Tomatoes	"	0.25 (25mg per 100g)	0.80 1.20
Spinach	"	1 mg (100mg Vit. C per 100g)	0.12 0.18
Sukumawiki (kales)	"	1 mg Vit. C (100mg/100g)	0.08 0.12
Sukumawiki	Vit. A	30 I.U (3000 I.U per 100g)	0.20
Carrots	"	30 I.U (3000 I.U per 100g)	0.20
Maize flour	Calories	3.54 calories (354 calories per 100g)	0.82 3.00

\*\* Nutrient content as found in the food composition tables.



## CHAPTER VII

### DISCUSSION

The present data indicates use of HPP by 82.2% of the sampled Population. This compare to other studies elsewhere in which the user rate was reported to be 85%, 57%, 54%,51% and 50%, respectively ( Read, et al. 1982; 1983; FDA, 1973 1974; 1975). The majority of the users of HPP (53.6%) used two or more products. The percentage of the users of each of the products in the last month of the survey (consistent consumers) was slightly lower than the total number of the users. This was more evident in the low-middle income cluster (Ofafa) which may be an indication that low-middle income families were not frequent consumers, but felt it necessary to mention that they consumed products such as Ribena.

There were no significant differences in the consumption of HPP by income, occupation, education and socio-economic status score of the heads of household. The results indicate that high income does not influence the number of HPP consumed. However, households in the low and middle income clusters (Uhuru and Ofafa) spent a relatively high proportion of their monthly income and food expe-

nditure on HPP as illustrated in figures 3 and 4.

The results suggest that to get consistent information on the consumption patterns of HPP, it is necessary that individual families consuming HPP, be followed for a period of 1-2 years, as opposed to a single interview as was the method used in this study (this will indicate whether the HPP are consumed continuously or only at a particular time)

When households were asked about who consumed the HPP, children were found to consume most of the products. This may be due the fact that marketing strategies are geared to children and this may influence the parents to buy the preparations. It may also mean that (some) parents are aware of the nutritional needs or vulnerability of their children.

The results indicate high consumption of Squashes (Treetop and Ribena). The labels and advertisements of these products indicate that these preparations provide extra vitamin C. Although the forms of the preparations differ (i.e. drinks as opposed to vitamin C pills), the high consumption of these drinks may be compared to the high consumption of vitamin C pills reported in other

studies (Read, et al., 1982; 1983; Harrill, et al., 1982; Schutz, et al., 1982; FDA, 1980, Stewart, et al., 1985; Bowering, et al.,).

The major reasons cited for using the various preparations compare closely to those cited in other studies in which supplementation was considered to be a sure way of making up of what may not be in the diet (Gallup, et al., 1982; 1983; Kurinij, et al., 1986; Worsley, 1986).

This seems to confirm the belief by some of the consumers that their diets are inadequate and there is therefore need for supplementation or the belief that some of the preparations cure or prevent certain ailments as the case may be with the consumption of vitamin C and Cod liver oils. Lucozade and Multivites were mainly taken for general weakness and loss of appetite.

Data regarding sources of information on HPP indicated that mass media, particularly the radio was an important source of information. This confirms views held by others on the influence of mass media or advertising and consumption of HPP (Breskin, et al., 1985; Williams, 1985; Dear doctor, 1985).

Other sources of information included clinics, hospitals and displays of the products in shops and supermarkets. Other studies mention doctors, dietitians, nutritionists, health food stores and magazines as sources of information (Schutz, et al. 1982; Read, 1986; Yearick, 1980). The results suggest that the consumption of products, such as Glucose and Ribena is promoted by the personnel in the hospitals and clinics as illustrated in Table 18.

Advertising creates 'need' and most people are receptive to the health claims, irrespective of their socio-economic status.

There is no doubt that Kenya like any other developing country is bombarded by heavy advertising of products manufactured by foreign firms or their subsidiaries in Kenya. East African Industries (E A I) spent 350,000, Cadbury Schweppes 95,000 and Beecham 48,000 Kenya pounds on advertising (Medawar, 1981). These firms produce most of the products considered to be health promoting by the sampled population.

Almost half of the sampled population (49.5%)

considered Cocoa and Cocoa based products such as Milo, Nescao, Bournivita and Drinking chocolate to be health promoting whereas these products may be part of their daily diet. The high consumption and belief that the products are health promoting may be due to the influence of advertising.

In many countries, food supplement industries have continued to thrive over the years and Kenya is no exception. The marketing and promotion of the health promoting preparations may in the long run mislead the consumers to believe that the preparations are better than locally available natural foods.

Of the households consuming HPP, 53.4% spent between 70-170 KSh on HPP. Fifty eight percent of the consumers spent between 2-9.9% of their food expenditure on HPP. Almost half of the consumers (51.2%) spent between 6-19.9% of their monthly income on HPP. Most of the consumers spent 1-19.9% of their food expenditure on HPP. Although the total expenditure on HPP does not appear to be substantial for most of the consumers, the amount may be substantial to families with limited incomes or budgets. Read (1982) made similar observations.

The dietary data indicated that a variety of foods were consumed by the sampled households. The diet variation increased with income groups i.e. the consumption of bread, butter/ blueband meat, eggs and rice was high in the upper and middle income clusters (Uhuru and Harambee) as illustrated in Table 13. Households in the low and middle income clusters (Ofafa and Uhuru) spent a high proportion of their monthly income on food compared to the upper middle income cluster (Harambee). This is in line with Engel's law which states that, "the proportion of a families budget devoted to food declines as the families income increases", (C.P.Timmer et al. 1983). However, this data were limited due to the small sample size.

On the whole, locally available natural foods were found to be cheaper than HPP in meeting the RDA of some the nutrients. For example, whereas it would cost approximately 0.64 cents to provide 20 mg of vitamin C (RDA for a child), from the Orange squash preparation, it would cost approximately 0.08, 0.12 and 0.36 cents to get the same nutrients from sukumawiki (kale), spinach and pawpaws, respectively. In addition, these foods would provide other nutrients apart from vitamin C.

It should be noted that in making these comparisons, the cost of the nutrient of interest was based on the entire preparation or comparable natural food whereas these products are likely to have more than one nutrient. For example, most of the preparations contain sugar, glucose and other food additives. Similarly, sukumawiki like any other green vegetable contains calcium, iron vitamin A and fibre in addition to vitamin C.

## CHAPTER VIII

### CONCLUSIONS AND RECOMMENDATIONS

#### 8.1 Conclusions

Overall, the study has found that there are a wide range of 'alleged' health promoting preparations in Nairobi. A substantial proportion (82.3%) of the sampled population consumed some of these preparations.

The preparations consumed are in the form of drinks, syrups, and powders. This differs from the fat soluble vitamin and mineral pills which have been found to be potentially toxic when taken in doses higher than the RDA.

Despite this difference, the wide consumption and expenditure on these preparations is a basis for concern, particularly among families who may already be living on limited budgets. These families are likely to substitute money that would have been utilized for buying nutritious foods by purchasing health promoting preparations (i.e households in Ofafa and Uhuru clusters). As judged from the present study, the preparations are mainly consumed for supplementary purposes and as tonics for general improvement and promotion of health.



Those taking the preparations may have little or no indication for their use.

A first comparison of costs of HPP against natural products indicates that a normal and well balanced diet is more cost effective than supplementing an unbalanced diet with HPP. Most people can obtain adequate quantities of essential nutrients from eating a variety of foods as opposed to health promoting preparations. Stanton (1986) summarized this in the following statement --- 'we need at least 50 different nutrients for the body to function well'. No dietary supplements contain all of these in correct proportions. We need to obtain our nutrients from food where often the nutrients that function together in the body are found in ideal proportions. We therefore need a variety of foods'.

Several studies have shown that preparations are not effective in well nourished individuals, but they may be indicated for the poorly nourished people (Barre et al., 1973, Bowerman, 1983, Bowering, 1986). There may be a need for supplements in cases of low intakes due to ill health or other reasons e.g. pregnancy. However, the preparations should be given on medical indica-

tion.

Although it is beyond the scope of the study to determine the efficacy of the preparations used, buying some of the preparations, such as vitamin D syrups is a waste of money in a country where sunshine is the rule.

From the study, it is evident that the consumption of the preparations is largely influenced by the claims made for these products through mass media advertisements and labeling. Quite often, the claims have more to do with impressing or motivating the consumers to increase their consumption than ensuring that the consumers spend no more than what they need on the preparations. Most of the claims tend to focus on the vulnerable members of the society such as children, expectant and nursing mothers, the sick and convalescent. For example, the advertisement for Ribena (a Beecham product) states that "mothers who care trust Ribena". In this case, mothers would be concerned with whether they are fulfilling their roles as well as they should and may therefore buy the products on this basis.

Through labeling and advertisements, appeals are

made to health so as to reinforce the messages and thereby influence the consumers. For example, the manufacturers of drinks and beverages such as Lucozade, Bournvita, Milo and Ovaltine claim that the products are ideal for health, strength and vitality. The main emphasis being health, the consumers believe the claims without much questioning and buy the products accordingly (according to the reasons given by the consumers).

Hospitals and clinics were mentioned as important sources of information for the consumers of the various products. It is unfortunate that doctors or medical personnel are prescribing the HPP without any indications as there were no indications to suggest that these preparations were taken on specific indications, such as clinical or vitamin or mineral deficiencies.

On the whole, emphasis should be laid on having balanced meals selected from locally available foods as opposed to health promoting preparations. Money spent on preparations would be better utilized in buying nutritious foods particularly in families of low socio-economic status.

There is a need to have codes governing the

marketing and promotion of the preparations and the public should be made aware of misinformation and unsubstantiated claims made for the preparations through labeling and advertisements.

## 8.2 Recommendations

Based on the findings of the present study, the following recommendations are suggested:-

### Nutrition education

There is a strong need for nutrition education to emphasize the following points to both the consumers and the health professionals:

- (i) Nutritional requirements particularly of specific groups of people, such as children, pregnant and lactating mothers and the sick. This may ensure against irrational prescription of preparations by the health professionals and the over-reliance on preparations by consumers when they may be of little or no value to them.
- (ii) The relationship between adequate diet, good health and appropriate versus inappropriate consumption of HPP.

(iii) The selection of a wide variety of locally available natural foods which may be cheaper in terms of providing essential nutrients compared to health promoting preparations.

#### Nutrition Health Policy

Nutritionists and health professionals should alert the policy makers on the following points:

- (i) Misinformation and unsubstantiated health claims found on the labels or advertisements of some preparations. For example, the advertisement of Squash (Treetop) indicate that "it is made from real orange and tastes like real orange". The labeling on Seven Seas (Fish oil) indicates that " it is a vital daily food".
- (ii) Introduction of codes to govern the marketing and promotion of the health promoting preparations.
- (iii) Reinforcing some of the codes governing the labeling of prepacked foods so as to ensure that the nutrient content is indicated in units similar to those used to describe the

contents i.e. Ribena gives the content of vitamin C in fluid ounces and grammes whereas the contents of the bottle are described in milliliters. The labels should indicate that the preparations are not needed by healthy persons consuming sufficient amounts of foods.

- (vi) Mass media messages carry special authority. There is therefore need to launch a strong campaign through mass media on the importance of selecting a wide variety of locally available natural foods and the role of supplements in the diet.

#### Further Research

To be able to make sound recommendations, more research is required in this area. For example, the following topics which were beyond the scope of this study would have greatly contributed to the results of the study.

- (i) Determination of the nutritional status of those consuming the preparations so as to establish the adequacy their diets (the dietary data in the present study were limited due to the small sample size)

- (ii) Comparing the nutritional status of the users versus the non-users of health promoting preparations.
  
- (iii) Establishing the characteristics of the users of preparation in the urban area and comparing these to the users in a rural setting.
  
- (iv) Determination of the nutrient content of the various preparations (laboratory analysis) using samples from firms and shops and establishing whether nutrient content as (analyzed) is similar to that indicated on the labels.
  
- (v) Comparing the cost and nutrient content of HPP to that of locally available natural foods.

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## Appendix A

### Monthly expenditure by income groups

Income groups	Monthly expenditure													
	0-999		1000-1999		2000-2999		3000-3999		4000-4999		5000+		Total	
KSh	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0- 999	8	47.1	9	52.9	-	-	-	-	-	-	-	-	17	6.2
1000-1999	13	21.0	33	53.2	11	17.7	4	6.5	1	1.6	-	-	62	23.0
2000-2999	5	11.4	16	36.4	10	22.7	8	18.2	4	9.1	1	2.3	44	16.3
3000-3999	5	11.4	5	11.4	11	25.0	15	34.1	1	2.3	7	15.9	44	16.3
4000-4999	1	2.7	1	2.7	4	10.8	10	27.0	5	13.5	16	43.2	37	13.7
5000+	4	6.1	-	-	7	10.6	2	3.0	20	30.3	33	50.0	66	24.4

$\chi^2$  significant (P<0.05)

High expenditure compared to income in a few cases may be due to under-reporting of income and over-reporting of expenditure. On the other hand, high incomes and low expenditures may be due to over-reporting of income and under-reporting of expenditure.

## Appendix B

### Income by education level of the head of household

Education levels	Income groups (KSh)										Total N=270			
	0-999		1000-1999		2000-2999		3000-3999		4000-4999			5000+		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Primary	16	26.2	29	47.5	7	11.5	5	8.2	3	4.9	1	1.6	61	22.6
Secondary	18	10.5	35	20.3	34	19.8	30	17.4	19	11.0	36	20.9	172	63.7
University	2	5.4	-	-	2	5.4	4	10.8	8	21.6	21	56.8	37	13.7

$\chi^2$  significant (P<0.05)

## Appendix C

### Occupation categories by income groups

Income groups	Occupation categories										Total	
	Unskilled		Semi-skilled		Skilled		LowerProf		Higher Prof.		No.	%
KSh	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0- 999	12	37.5	12	31.6	3	8.3	76.4	2	3.7	36	13.4	
1000-1999	18	56.3	12	31.6	11	30.6	23	20.9	-	-	64	23.7
2000-2999	2	6.3	7	18.4	9	25.0	22	20.0	3	5.6	43	15.9
3000-3999	-	-	3	7.9	5	13.9	26	23.6	5	9.3	39	14.4
4000-4999	-	-	3	7.9	5	13.9	13	11.8	9	16.7	30	11.2
5000+	-	-	1	2.6	3	8.3	19	17.3	35	64.8	58	21.4

$\chi^2$  significant (P<0.05)

## Appendix D

### Household sizes by education levels of the heads of households

Household sizes	Primary		Secondary		University		Total n=270	
	No.	%	No.	%	No.	%	No	%
1-2	11	21.6	36	70.6	4	7.8	51	18.9
3-4	21	29.2	42	58.3	9	12.5	72	26.6
5+	29	19.7	94	63.9	24	16.3	147	54.5

$\chi^2$  not significant ( $P < 0.05$ )

There was no significant association between education levels of the heads of households and household size.

## Appendix E

### List of preparations on the market

Aquasale	Calcium-pantothanate
Amino acid	Chelarted zinc
Aminoche1	Cod-liver oil oil
Acerola	Dexorange
Becosym	Dextrol
B Complex with C	Duraltonic
B Complex	Delrosa
B-Vite	
Black currant tablets	Drinking chocolate
Black currant healthy drink	Extra energy
	Emulcod (cod-liver oil)
Bournivita	Energy
	Ephynal (Vitamin E)
Citonic	Ferbelan (family iron tonic)
Cremex healthy drink	Forceval (Protein)
Calciumax	Food supplement
	Lifeplan Vitamin E
Glucose	Lifeplan Vitamin B
Glucolin + Vitamin C	Lifeplan Vitamin B <sub>6</sub>
Glucolin (powder)	Multivites
Glucolin (tablets)	Multivite drops
Nevite	Multivitamin food supplement
Heyho (orange squash)	Minadex
Haliborange	Maxepa
Hevite Iron	Multivitamin
Iron Plan (capsules)	Magnesium food supplement
Isomil Soy Isolate	Milo
Kirbys	Noravite
Kepler (cod-liver oil oils)	Super wateon
Lucozade	Super vitamin B <sub>6</sub>
Lysine	Super liver plus
Orange squashes (Treetop)	Summa vitaminforte
Optose	Supplamins
Overplus	Vimto
Osto-calcium	Vidalyn (syrup)
Ovaltine (food tonic)	Vidalyn (drops)
Plenivite	Viminova
Prosobee	Vitamin A
Provitamin drops	Vitamin E (capsules)
Polyvisol	Vitamin C (tablets)
Ribena	Wateron
Recresal	Wheat germ oil
Restroactive	Zinc tablets
Redoxon	Sanatogen (multivitamin+ iron)
Scots emulsion (orange)	Sanatogen (plain)
" " (plain)	Sanatogen (junior)
Seven seas (syrup)	
" " (tablets)	



## Appendix F

The sizes and mean price of the frequently consumed preparations

Preparation	Unit	Size	Mean price KSh	Price/ Unit KSh
Ribena	200ml	small	14.50	0.07
"	320ml	medium	24.80	0.07
"	500ml	large	34.00	0.07
Lucozade	510ml	medium	25.00	0.05
"	710ml	large	34.20	0.05
Multivites	120ml	small	16.90	1.41
"	150ml	medium	23.15	0.15
"	300ml	large	39.15	0.13
Minadex	150ml	medium	19.75	0.13
Treetop	700ml	medium	15.00	0.02
Fruit Lyons (squash)	1500ml	large	22.50	0.01
Trufu (squash)	510ml	medium	14.80	0.02
Haliborange	125ml	medium	23.57	0.38
Cod-liver oil	100ml	medium	15.77	0.15
" "	225ml	large	33.97	0.15
Seven seas	170ml	medium	35.20	0.20
" "	450ml	large	76.90	0.17
"	50tab.	small	23.77	0.47
Sanatogen+				
Iron	30 "	medium	43.60	1.45
" (plain)	30 "	medium	30.77	1.02
Osto-calcium	50 "	medium	21.20	0.40
Osto-calcium	500 "	large	72.20	0.14
Glucose	100g	small	3.87	0.03
"	250g	medium	10.65	0.04
"	500g	large	18.70	0.03
Glucolin	100g	small	9.30	0.09
"	250g	medium	12.10	0.04
"	500g	large	23.73	0.04
Glucolin +C	250g	medium	20.60	0.08
Dextrol	49g	small	7.80	0.15
Cocoa	100g	small	13.85	0.13
"	200g	medium	24.67	0.12
"	400g	large	46.17	0.11
Bournvita	100g	small	11.95	0.11
"	200g	medium	20.77	0.10
"	400g	large	37.10	0.09
Ovaltine	200g	medium	28.30	0.14
"	400g	large	44.82	0.11

## Appendix G

### The sizes and nutrient content of frequently consumed HPP

Product	Manufacturer	Size	Price	Ingredients	Claims	Nutrient
Ribena	Beecham (K)	500ml	34.00	black currant juice, sugar citric acid ascorbic acid sodium benzoate	made from english black currants. Is rich in vitamin C and supplements a normal diet	Vit C amount not indicated
Black currant health drink	Kenya products	700	21.90	black currant sugar, colour preservations fortified with Vitamin C		Vit. C amount not indicated
Cremex black currant drink	Cremex (K)	700	21.90	black currant juice sugar flavours vitamin C (not less than 45 mg per 25 gms preserved with sodium benzoate		Vitamin C 45 mg/25g
Black currant health drink	Trufoods (K)	700	28.75	Contains not less than 20 mg of Vit. C/fluid oz. with sugar added.		20 mg per fluid oz.
Peep currant health	Kenya	700	25.80	Vitamin C fortified black currant contains no additives or artificial ingredients		amount not indicated
Ribena black currant drink with Vit. C	Beecham Kenya Ltd	320	24.45	Pure sugar, black currant juice citric acid Vitamin C and sodium benzoate	with extra Vit.C	Vit.C amount not indicated
Glucolin black currant	Glaxo (E.A.) Ltd	250	21.90	dextrose, monohydrate sugar citric acid ascorbic acid, acid approved colour and flavour, Vit. C not less than 50mg/100 g	It is a delicious healthy drink its an important source of instant energy and Vit. C	Vit. C 50mg/100g calories 350/100g
Orange	E.A.I	750	16.00	Sugar, orange	with Vit. C	Vit. C

Squash treetop	(K)			commune, glucose citric and Vitamin C permitted food flavours and colours	and glucose	amount not indicated
Orange drink heyho	E.A.I (K)	700	15.60	-		
Trufru orange drink	Trufoods (K) Ltd	1.5 ltr	27.80	sugar, fruit juice citric acid flavours and food colour	-	not known
Joy orange drink	Kenjoy industries	700	11.50	fruit juice, sugar citric acid flavours & colours preserved with sodium benzoate	-	"
Lucozade glucose	Beecham of Kenya Ltd.	710	34.80	Glucose syrup carbon dioxide citric acid sodium benzoate artificial flavour - ings and colours	replaces lost energy for invalids, convalescents and for general use. Its of use home & in hospital particularly in case general convalescence fatigue nauseous conditions including children's infective diseases	67.9 Kcal / 100g
Glucolin (plain)	Glaxo (E.A.)	250	19.00	Dextrose monohydrate 99.1g calcium 160 mg vitamin O 1251.0 calories 340/100g		calories 340 kcal / 100gm
Codliver oil Scots emulsion		100	15.95	Vitamin A " D Codliver oil calcium hypophosphate sodium "	Is rich in Vitamin A C & D the growth promoting vitamin essential to proper development of a healthy body and normal functioning at every stage of life	
Seven Seas	Imported	170	36.20	Vitamin A " D E	The vital daily food	
Haliborange	Glaxo E.A	125	23.50	Vitamin A = 2500 I.U. D = 200 I.U. C = 8mg	It is rich in Vit. A D C These vit. provide resistance	

per 5ml to infections like

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Multivite	Glaxo E.A.I	150	21.20	Vitamin A (100.10) B 1.5 mg Riboflavin 1.5 Nicotinide 10 mg Vitamin B2 2.5 " C 40mg D 2001.0 per 5mls
<hr/>				
Minadex		150	20.60	Iron - 12mg per 5 mls iron feric 2.25 potassium 11.5 calcium copper sulphite
<hr/>				
Sanatogen Multivitamin + iron		30	34.30	Vit. A 01 I.U " B2 1.8mg C 30 mg D 400 I.U E 800 I.U Nicotinamide 12 Potassium 12 Iron 45.6

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## Appendix H

### List of frequently consumed beverages

Product	Manufacturer	Ingredients	Claim
Milo	Nestle foods (K) Ltd.	Barley and malt extracts full cream milk, sugar and cocoa, vitamin B1 D, Iron, calcium organic phosphates and magnesium	Energy drink for health and strength good for children, students and adults
Nescao	Food Specialities (K)	Flavoured cocoa mix-sugar skimmed milk corn starch and vanillin	
Cadbury Cocoa (K) Ltd.	Cadbury Schweppes	Cocoa powder and flavourings	
O' Boy Cocoa	Dubuit (K) Ltd.	Unsweetened cocoa	
Exell Cocoa powder	Excell Chemicals (Ltd)	Not indicated	
Bournvita	Cadbury Schweppes (K) Ltd.	Vitamin B <sub>1</sub> = 2.0 mg/100g " B <sub>2</sub> = 2.7 mg/100g " B = 3.7 mg/100g Nicotinic acid = 30.0/100g	For health and vitality
Cadbury's drinking chocolate	"	Sugar, cocoa and flavourings	Make with milk
Ovaltine	Imported (wonder)	Protein 12mg/100g carbohydrate 79.3g/100 maltose 30g oligosaccharides 28 " lactose 7g/100 glucose 49 fructose 1g/100 fat 3.1 g magnesium 240mg calcium 210 iron 18mg vitamin A 500 I.U " B 1.6 Niacin 18 mg Moisture water 2.0, folic acid 0.4 B 3.0mg	Tonic food especially suitable for children meets increased need for carbohydrates, minerals and promotes normal growth for sportsmen The natural mater- ials provide the the body with supp- lementary nutrition . .

Appendix I

Reasons for using each of the HPP

Product	Reasons for use	No.	%
Ribena	Vitamin supplement	41	42.2
	other health reasons*	30	31.0
	liked by children	9	9.3
	refreshing	7	9.6
	to improve appetite	7	9.6
	fruit substitute	3	3.1
		97	100
Treetop	Vitamin supplement	53	37.1
	liked by children	49	34.3
	other health reasons	17	11.9
	fruit substitute	11	7.7
	refreshing	10	6.9
	for appetite	3	2.1
		143	100
Glucose	energy	68	70.8
	other health reasons	20	20.8
	to improve appetite	6	6.3
	liked by children	2	2.1
		96	100
Lucozade	to improve appetite	30	52.6
	energy	17	29.8
	other health reasons	10	17.6
		57	100
Fish oils	cough medicine	34	43.6
	vitamin supplement	22	28.2
	other health reasons	22	28.2
		78	100
Cocoa	energy	49	39.5
	beverage	33	26.6
	additional blood	19	15.3
	other health reasons	14	11.3
	milk substitute	9	7.3
		124	100
Multivitamins	other health reasons	20	57.1
	vitamin supplement	15	42.9
		35	100

\* Non-specific subjective reasons e.g. "I generally feel better,.. you know".

### Appendix J

#### Months elapsed since initial use of HPP

Months	Sq. n=143 %	Co. n=124 %	Ri. n=97 %	Gl. n=96 %	Fi. n=78 %	Lu. n=57 %	Mu. n=35 %
1	4.9	4.9	6.1	6.3	5.1	8.8	14.3
2-5	2.0	5.6	12.4	12.5	7.7	10.5	25.7
6-12	7.1	9.7	14.5	12.5	20.5	19.3	20.0
12+	86.0	79.8	67.0	68.7	66.7	61.4	40.0

More than half of the consumers had used the products for more than a year as illustrated above.

### Appendix K

Soscore, Income by the use of glucose in the last month

	Total popu- lation	Means	Source of vari- ation	Sum of squares	D.F.	Mean square	Bi	Sig of F
Soscore	96	12.48	main	31.099	1	31.099	6.079	.015
by Gl.	(1)*71	12.82	effects	31.099	1	31.099	6.079	.015
	(2)*25	11.52						
Income	96	3.41	*	15.919	1	15.919	5.909	.017
Gl.	(1)*71	3.65	*	15.919	1	15.919	5.909	.017
	(2)*25	2.72						

\* 1 = Use of the preparation in the last month

### Appendix L

Soscore, Income by the use of treetop in the last month

	Total popu- lation	Mean	Source of vari- ation	Sum of squares	D.F.	Mean square	Sig of F
Soscore	142	12.36	main	15.600	1	15.600	3.682 .057
by Tr.	(1)*103	12.56	effects	15.600	1	15.600	3.682 .057
	(2)*39	11.82					
Income	142	3.40	*	9.806	1	9.806	3.591 .60
Tr.	(1)*103	3.56	*	9.806	1	9.806	3.591 .60
	(2)*39	2.97					

\*2=Non use of the preparations in the last month.



## Appendix M

### Type of stores

Store type	No	%
Supermarkets	182	67.4
Shops	49	18.1
Pharmacy	7	2.6
Do not know	2	0.7
Non-users	30	11.2
	270	100

More than half (67.4%) of the consumers of the preparations made their purchases in the supermarkets followed by the shops as shown above.

Appendix N

HOUSEHOLD QUESTIONNAIRE ON HEALTH PROMOTING  
PREPARATIONS (HPP) PROJECT

(All information is confidential)

Household number ( ) ( ) ( )

Location ( ) 1 = Uhuru 2 = Harambee  
3 = Ofafa Kunguni

Date ( ) ( ) ( ) ( ) 8 ( )

Interviewer ( ) 1 = self 2 = David  
3 = Obasi

1. Name of H/H \_\_\_\_\_

Name of respondent \_\_\_\_\_

Relationship to the H/H ( ) ( )

(If respondent is other than the H/H)

00 = self 01 = wife 02 = daughter

03 = son 08 = other (specify)

\_\_\_\_\_

2. Age of the H/H ( ) ( ) sex ( )

M = male F = female

3. Education of the H/H ( ) ( )

Education of the wife ( ) ( )

(in case H/H is male)

00 = No formal education

01-08 = Pri-Sch (last class completed)

09-14 = Sec. Sch

15-18 = University

88 other (specify) \_\_\_\_\_

77 = RR

99 = DNK

4. Occupation of the H/H \_\_\_\_\_

" of the wife \_\_\_\_\_

(actual names of occupations to be given).

5. Persons living in the household

<15 years males ( ) ( ) females ( ) ( )

>15 years males ( ) ( ) females ( ) ( )

(including H/H or respondent)

6. Total number in the household ( ) ( )

(regular members)

7. Monthly expenditure on the following :

House rent \_\_\_\_\_ KSh

Electricity \_\_\_\_\_ KSh

Water \_\_\_\_\_ KSh

Food \_\_\_\_\_ KSh

Transport \_\_\_\_\_ KSh

(for all household members)

House servant(s) \_\_\_\_\_ KSh

Monthly expenditure on the following fuels:

Gas \_\_\_\_\_ KSh

Charcoal \_\_\_\_\_ KSh

Paraffin \_\_\_\_\_ KSh

Approximate annual expenditure on the

following :

Medical care \_\_\_\_\_ KSh

1 = <50 KSh 2 = >50<100 KSh

3 = >100 4 = N/A 7 = PR 9 = DNK

Clothing - adults (>15 yrs) \_\_\_\_\_ KSh

- children (<15 yrs) \_\_\_\_\_ KSh

School fees \_\_\_\_\_ KSh

(including Sch. harambee paid

in the last 12 months)

Stationery \_\_\_\_\_ KSh

Insurance \_\_\_\_\_ KSh

Loan repayment \_\_\_\_\_ KSh

(including higher purchase payments)

9. What is the household's total

monthly income ? \_\_\_\_\_ KSh

(including contributions from other

members of the household)

i)\* explanation of HPP given

10. Which health promoting preparations

(HPP) do you buy?

\_\_\_\_\_

Name of Pre- paration	Size	Freq.	Use in the last month
--------------------------	------	-------	--------------------------

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

- d) \_\_\_\_\_
- e) \_\_\_\_\_
- f) \_\_\_\_\_
- g) \_\_\_\_\_

11. Which sizes do you buy?

1 = small 2 = medium 3 = large

4 = <50 tablets 5>100 tablets

12. How often do you buy the above sizes of packages (HPP) ?

1 = weekly 2 = monthly 3 = 3-4 times

in a year 4 = rarely i.e. less than 3-4 times in a year 5 = bought only once this year

13. Which of the mentioned (HPP) have you used in the last one month?

1 = Yes 2 = No.

14. Do you have any HPP in the house now? ( )

1 = Yes 2 = No

15. Can you show me the (HPP)? (actual preparations or containers to be observed)

1 = present 2 = absent

16. For what use do you buy the (HPP)

mentioned? (What the respondent

thinks are the uses or benefits of (HPP).

---

Name of Preparation    User    Use/benefit

- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c) \_\_\_\_\_
- d) \_\_\_\_\_
- e) \_\_\_\_\_
- f) \_\_\_\_\_
- g) \_\_\_\_\_
- h) \_\_\_\_\_

17. Who uses each of the preparations  
when you buy?

1= self 2=children 3= whole family  
4=visitors and others specify

---

---

Preparation	Dosage		Freq.
	User		of
	child	adult	use

---

- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c) \_\_\_\_\_
- d) \_\_\_\_\_
- e) \_\_\_\_\_
- f) \_\_\_\_\_
- g) \_\_\_\_\_

18. How much (dosage) do you take of each of the (HPP) at a time?

19. How often are the (HPP) used when bought?

1 = daily 2 = every other day

3 = weekly 4 = occasionally

5 = N/A 7 = R.R 9 = DNK

20. How did you find out about the preparations?

1 = radio 2 = TV 3 = newspaper

4 = friends 5 = hospital/clinic

6 = saw in the shop 8 = others

(specify) \_\_\_\_\_

---

Knowledge 1st time Satis-





health promoting? ( ) 1 = yes 2 = no

26. Which vitamin preparations do you or members of your household take?

---

Preparation	Size	freq.	dosage	
			child	adult

---

\*(ii) Question 25 should only be asked in case:-

- a) vitamin preparations have not been mentioned as HPP
- b) respondent has not indicated the use of any (HPP).

\*(1) Definition of (HPP)

Health Promoting Preparations (HPP) are defined as preparations in the form of pills, tablets, powders, drinks, syrups or emulsions which can be bought from the chemists, shops, supermarkets without a doctor's prescription but claim to promote health and nutrition and protection from diseases. These products often suggest to supply one or more essential nutrients such as vitamins, minerals and extra energy to an individual's diet.

The definition excludes :

- a) Curative types of preparations e.g. cofta  
(cough syrup)
- b) Food flavourings such as Roiko (mixture of  
salt and spices added to stews for flavour)
- c) Food substitutes i.e. baby formula
- d) Actual natural foods

Appendix O

SHOPS, SUPERMARKETS AND MANUFACTURERS SURVEY OF

HEALTH PROMOTING PREPARATIONS

Name of the Shop/Chemist/Supermarket/

Manufacturer \_\_\_\_\_ Retail/wholesale \_\_\_\_\_

Location \_\_\_\_\_

Date \_\_\_\_\_

Which of the following preparations do you stock?

(list of preparations given)

---

Name of the preparation	Manufacturer	Packaging	Sizes	Prices	Nutrient
	L=local	gms, mls,	1 2 3 4	1 2 3 4	content
	I=imported	tablets,			qualitative
		capsules			&quantitative
<hr/>					
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**Appendix P**

MARKETS AND KIOSKS SURVEY FORM

Name of the Market/Kiosk \_\_\_\_\_

Location \_\_\_\_\_

Date of Interview \_\_\_\_\_

Month \_\_\_\_\_

\_\_\_\_\_

Food Items	Quantity in Kg	Prices per kilogram			
		Wk 1	Wk 2	Wk 3	Wk 4

Oranges \_\_\_\_\_

Lemons \_\_\_\_\_

Limes \_\_\_\_\_

Tangerines \_\_\_\_\_

Grapefruits \_\_\_\_\_

Mangoes \_\_\_\_\_

Guavas \_\_\_\_\_

Pawpaws \_\_\_\_\_

Pineapples \_\_\_\_\_

Pears \_\_\_\_\_

Plums \_\_\_\_\_

Banana (ripe) \_\_\_\_\_

Tomatoes \_\_\_\_\_

Carrots \_\_\_\_\_

Sukumawiki \_\_\_\_\_

- Spinach \_\_\_\_\_
- Cabbage \_\_\_\_\_
- Cowpea leaves \_\_\_\_\_
- Pepper (sweet) \_\_\_\_\_
- Pepper (chillies) \_\_\_\_\_
- Onions \_\_\_\_\_
- Potatoes (Irish) \_\_\_\_\_
- Potatoes (sweet) \_\_\_\_\_
- Arrowroot \_\_\_\_\_
- Bananas (green) \_\_\_\_\_
- Maize (green) \_\_\_\_\_
- Maize (dry) \_\_\_\_\_
- Peas (dry) \_\_\_\_\_
- Peas (fresh) \_\_\_\_\_
- Beans (dry) \_\_\_\_\_
- Green grammes \_\_\_\_\_
- Groundnuts \_\_\_\_\_

Appendix Q

Household Questionnaire On HPP

(Reliability Check)

Date..... ( ) ( ) ( ) ( ) ( )

Household No..... ( ) ( ) ( )

Location..... ( )

1= Uhuru 2= Harambee 3=Ofafa

Name of respondent.....

(1) Which of the following Products do you buy?

Product Yes No Size Frequency Present Absent HPP

Ribena \_\_\_\_\_

B.Currant \_\_\_\_\_

Lucuzade \_\_\_\_\_

Glucose \_\_\_\_\_

Glucolin \_\_\_\_\_

Treetop \_\_\_\_\_

Squash \_\_\_\_\_

Haliborange \_\_\_\_\_

Seven Seas \_\_\_\_\_

Codliver oil \_\_\_\_\_

Multivitamin \_\_\_\_\_

Minadex \_\_\_\_\_

Sanatogen \_\_\_\_\_

Dextrol \_\_\_\_\_

Cocoa \_\_\_\_\_

Bournivita \_\_\_\_\_

Drinking Choc. \_\_\_\_\_  
Ovaltine \_\_\_\_\_  
Milo \_\_\_\_\_  
Heyho \_\_\_\_\_  
Fruit Tree \_\_\_\_\_  
Honey \_\_\_\_\_  
Weetabix \_\_\_\_\_  
Cerellac \_\_\_\_\_  
Frutex \_\_\_\_\_  
Tomatoe Sauce \_\_\_\_\_  
Nan \_\_\_\_\_  
Roiko \_\_\_\_\_

(2) What Sizes do you buy?.....

Sizes: 1= small 2= medium 3= large

4= <100 5= >100

(3) How often do you the mentioned HPP.....

Frequencies: 1= weekly 2= monthly

3= rarely i.e. less than 3-4  
times in a year.

(4) Do you have any of the HPP in the house now?

1= Yes 2= No

(5) Which of these products do you consider to be  
health promoting? 1=HPP 2=Not HPP

## Appendix R

### Dietary Survey Form

What foods did you have for the following meals  
(24 hour recall)

Food Groups Breakfast Snacks Lunch Snacks Supper

Milk and

Milk

products

---

Cereals and

Breads

---

Fruits and

vegetables

---

Meat, Fish

Poultry and

alternates

---

Other foods commonly consumed by the family:

Additional comments on the diet: