

**FAO SUB-REGIONAL OFFICE FOR THE PACIFIC ISLANDS**

**Research Report**

**Knowledge, Attitudes, Beliefs and Practices  
related to the Consumption of  
Fruit and Vegetables in Samoa**

*Prepared by:*

Ruta Fiti-Sinclair

FAO Consultant

*Apia, Samoa*

*November 2004*



**FOOD AND AGRICULTURE ORGANIZATION OF THE  
UNITED NATIONS**

# Table of Contents

<b>Abstract</b>	<b>2</b>
<b>1 Introduction</b>	<b>3</b>
<b>2 Background: Samoan values and their implications</b>	<b>4</b>
<b>3 Methodology</b>	<b>6</b>
<b>4 Results</b>	<b>8</b>
<b>5 Conclusion</b>	<b>16</b>
<b>6 Recommendations</b>	<b>17</b>
<b>7 Glossary</b>	<b>19</b>
<b>8 References</b>	<b>20</b>
<b>9 Appendix: Discussion guide</b>	<b>21</b>

## **Abstract**

The main aim of this study is to find out why Samoans are not eating much fruit and vegetables, which are now plentiful in the country. The secondary aim is to make recommendations for improving Samoans' consumption of fruit and vegetables.

The two qualitative methodologies of focus group discussions and in-depth interviews were used to investigate Samoan knowledge, attitudes, beliefs and practices relating to food. These findings cannot be generalised as they are not a representative sample, but they are views of individuals based on their own knowledge, attitudes and practices regarding food. There were three focus group discussions and six women and four men were interviewed in various locations around Upolu.

Previous studies revealed a number of factors affecting fruit and vegetable intake of Samoans. This qualitative study revealed other factors, which are not so easy to establish from quantitative methodologies. The background section was prepared by the researcher, incorporating her own knowledge as a Samoan, with views canvassed during the discussions and interviews. Samoan values, concepts and food classifications differ sharply from the physical/biological Western concepts of nutrition. For a campaign aimed at promoting the consumption of fruit and vegetables to succeed, it must incorporate the Samoans' view of food. More educational programmes to give meaningful (in the Samoan context) nutritional knowledge to people will empower them to make decisions to increase their fruit and vegetable consumption. Parents should be encouraged to give fruit and vegetables to children early so they acquire the taste for them, and food sold to school children needs improvement. Increasing the supply of fruits and vegetables by planting fruit trees and vegetables close to homes and schools is also a way to encourage consumption.

## 1 Introduction

The traditional diet of Samoans was very low in fruit and vegetables (Kramer 1903), and although many Samoans eat some fruit and vegetables today, the present-day diet of the average Samoan is still far below what is recommended by WHO (Quested 2004). The STEP survey implemented by the Ministry of Health in 2002 showed that most Samoans eat fruit less than three days per week, and 35.6% of the population eat virtually no fruit at all<sup>\*</sup>. For vegetables, this survey found people eat vegetables most (6.5) days of the week, and over half of the population eat 5 or more servings of vegetables per day. This is only because the STEPS survey included starchy crops such as taro, bananas, yams and breadfruit as vegetables. The consumption of vegetables would have been much lower if these starchy crops were excluded from the vegetable intake. The STEPS results cannot be compared directly to the results of this study which does not include the starchy foods as vegetables.

The only green vegetable Samoans used to eat in the past was taro leaves which were cooked with coconut cream to make *palusami*, a Samoan delicacy. There were no other known green vegetables (A. Whistler. 2000). The variety of fruits was also limited, with ripe bananas, green coconuts and pawpaws as the only year-round fruits, while the rest, such as mangoes, oranges, pineapples, vi and guavas were seasonal. Samoans did and do eat fruits when they are in season and when plentiful, but they are eaten as snacks, not as part of a meal. There was and is a recognition that fruits are “good for you”, and this must be why fruits were and are given more to children, lactating mothers, the sick and the elderly. Fruits were and are used for preparing food such as *supo esi*, *koko esi*, *vaisalo*, *valuvalu vi*, *poi*, *suafai* and *loifai* (see glossary for the definitions of these words). These foods are part of what is now known as ‘Samoan foods’. Everyone enjoys eating these foods, but because their preparation requires extra work, they were usually made more for those who need building up.

The question is: why is the diet of the average Samoan still low in fruit and vegetables when there are so many other fruits and vegetables available in Samoa today? This study was conducted to find out why this is so. The findings are to help the staff of the Nutrition Section of the Health Department to design and improve educational programmes to improve the diet of the Samoan population. The aim of the Nutrition Centre is to have all Samoans eat a variety of fruit and vegetables on a regular basis as in the ‘5+ a day’ programme. How can Samoans be encouraged to achieve the aim of the ‘5+ a day’ programme?

The study was commissioned by the Nutrition Section, and funded and technically supported by the Sub-Regional Office of the Food and Agriculture Organization of the United Nations.

The study had the following objectives:

1. To investigate reasons why the average Samoan diet is low in fruits and vegetables.
2. To make recommendations to help develop appropriate promotional approaches and materials to improve the intake of fruit and vegetables in Samoa.

For the purpose of this study, starchy staples such as taro, bananas, breadfruit, yams, and rice are not included as vegetables, as their primary nutritional function is to supply carbohydrates (energy). ‘Vegetables’ in the context of this study refer mainly to leaves and other edible parts of

---

<sup>\*</sup> i.e. no fruit or less than one serving a day

plants cultivated as field and garden crops to be used as a “healthy” or “protective” supplement to the two main components of a meal, i.e. protein/body building foods and carbohydrate/fat/energy foods). This approach reflects the common concept of three food groups (Body Building, Energy, Protective). Certain plants, normally classified as cereals and pulses, belong to this group when harvested green, such as green maize, green peas, etc.

## **2 Background: Samoan values and their implications**

This section is from the knowledge of the researcher as a Samoan and confirmed during the discussions and interviews.

It is important to understand the foods and how they are classified in the perception of Samoans if we wish to promote any change in their diet. Food classifications are summaries that help us to understand relationships, how order has arisen, and traditional food systems (Englberger et al. 2003. pg 426).

The basis of Samoan diet is the starchy staple foods such as taro, banana, breadfruit, and yams. An ideal Samoan meal consists of *mea ai aano* and *mea ai lelei*. *Mea ai aano* is the starchy staple foods and *mea ai lelei* is the protein part of the meal, which can be of pork, beef, chicken, lamb, fish or shellfish or a coconut dish. The *mea ai aano* makes up the bulk of the meal with the *mea ai lelei e ina'i ai le saka poo le umu* (meat dish to accompany or complement the baked or boiled starchy staples). A coconut dish such as *palusami*, *fai'ai* (baked coconut cream) or *miti* (salted, diluted coconut milk) can *ina'i* (complement) the staple, or the staple itself may be cooked in coconut milk (*faalifu*), and this together with *koko Samoa* (a hot drink made from roasted and pounded cocoa beans, sweetened with sugar) used to be considered a complete meal.

Before refrigerators and the importation of frozen meats, meats were not so common, so the meat portion of a meal was much smaller than the staple part. But nowadays, some family meals have about equal amounts of *mea ai lelei* and *mea ai aano*. A meal of just a starchy staple and a hot drink of tea or *laumoli* (a sugared lemon leaf tea) is still common amongst poorer families.

Although the classification of food (taught in schools and by health and nutrition workers and in posters and brochures) into energy, body-building and protective foods is well known by those interviewed, the Samoan classification of foods is still into *mea ai lelei* and *mea ai aano*, and the fact that vegetables were not part of this classification of foods means that when preparing a meal, vegetables are not considered part of a meal and therefore not included. The way most Samoans eat vegetables now is as part of a soup or chow mein or *apa eleni* or *fasi mamoe* fried with beans, pumpkin or cabbage. Samoans would eat the vegetables in these dishes as part of the *mea ai lelei*, but beans, eggplants or other vegetables cooked on their own, or a green leafy salad is often left untouched by many Samoans.

A Samoan meal of *mea ai aano* with accompanying *mea ai lelei* is completed with a cup of tea or *koko Samoa*, often drunk at the end of the meal. Sweet foods such as desserts or fruits are not part of a Samoan meal, although cakes and pies are beginning to be accepted as part of a public feast or when hosting important visitors. Fruits are eaten as a snack or given to young children, the sick and old people, whose bodies need strengthening. Fruits are not for ‘strong’ people. Serving up fruits as part of a meal may not be the way to encourage the eating of fruits to Samoan. Promoting them as a regular snack (as that is how they are perceived), for health and enjoyment may be a better approach to encourage the consumption of fruits.

Although values and some practices regarding food remain, Samoans, like other peoples of the world, are undergoing changes and modernisation. It is important to recognise the variation and gradation of change among the diet of Samoans. There is a continuum from those whose diet has achieved the '5+ a day' status, few as these may be, to those who are eating some irregularly, through to those who eat absolutely no vegetables at all except for *palusami*.

There is also a continuum between rural and urban living and modern and traditional life styles amongst Samoans. It is wrong to refer to villages as if everyone in all villages has the same foods and to urban families as being equal in regards to the consumption of fruit and vegetables. There are in some villages families who have regular cash income and have refrigerators, and therefore buy more of their food and can store it for longer periods. They may also have more knowledge of nutrition than others in the village. This family's food can be more comparable to an urban family than to other village families. These variations in people's diets in regard to fruit and vegetable consumption, and the variations in family levels of modernisation must be kept in mind when preparing intervention programmes.

To eat '5+ a day' fruit and vegetables, there must be a regular handy supply of a variety of fruit and vegetables. The following are some of the factors that can aid a regular intake of a variety of fruit and vegetables.

- Availability. There should be fruit and vegetables to be harvested or bought.
- Accessibility. The garden or markets and stores selling fruit and vegetables should be handy, or there is transport to go to the plantation or market if they are far.
- Affordability. Sufficient money to buy if not grown in own garden
- Storage. There should be a safe or refrigerator to keep the vegetables fresh.
- Knowledge to select and store fruit and vegetables correctly and prepare them in a tasty manner.

There is a mindset amongst Samoans that makes them buy food on a daily basis. This mindset is deep-seated but it can hinder the success of a 5+ a day programme. Traditionally, food was obtained daily from the gardens because it is good to eat fresh food, but also because the starchy staples and coconuts are heavy and must be carried on people's shoulders from the inland plantations, and these take priority over any vegetables. Today, even if there are refrigerators to store more than a day's supply of food, enough money to buy it, transport to carry enough from the garden or market, on the whole, Samoans still buy or harvest foods for just one or two days.

Associated with this is the idea that what food is there, must be eaten that day, because "*e sau lava taeao ma ona 'ai*" (tomorrow will come with its own food). So budgeting the food to have enough for the next day is not a common notion, and people tend to cook what is there even if it is much more than is needed. This makes it pointless to try and save by buying food in bulk. It also leads to people eating more than is needed by their bodies. Because the food was there, and because there were no refrigerators in the past, any food that that was prepared was eaten. There was also the chance that the next meal was going to be late, so it was best to eat up any food that was there so they wouldn't be too hungry before the next meal. So although families have refrigerators today and food can be stored safely there, many refrigerators I have seen are empty of food, with just bottles of water for drinking.

Collective living and sharing is at the heart of Samoan culture and the sharing of food is one of the most visible expressions of Samoan values. Food is shared not only formally on social occasions such as a wedding, funeral, bestowal of titles or opening of a new house, but it is also shared on a

day-to-day basis amongst neighbours. Sharing equally amongst neighbours means people feel free to borrow as they will reciprocate when they have something they can spare to share. However, this works well when there is equality in the giving and receiving, but it doesn't work so well when one is always borrowing with nothing to give to others. Equal sharing used to work in the past in villages when there was little difference in the families' resources. However, today, the value of sharing makes it difficult for those who can afford to buy food in bulk, because some neighbours can come and ask for some and one is obliged to give as it is bad form not to share. This happens more in villages, but some urban dwellers still have this habit. This all contributes to the practice of obtaining food daily, so one can say with a clear conscience that she doesn't have something when a neighbour comes to borrow. So instead of buying enough vegetables for a few days when going to the market, the thinking is still just for the food for the day, and if the market is not easily accessible, the chances are nobody will go to the market daily and therefore no vegetables are eaten daily.

These factors of Samoan culture and psyche need to be understood and considered in order for any intervention to be successful in achieving dietary change.

### **3 Methodology**

Qualitative methods of focus group discussions and in-depth interviews were used to investigate what Samoan people know, what they believe, what their attitudes are, and what they do with respect to food.

The discussions and interviews were structured, starting with an introduction, then an exercise to recall what each person had eaten in the previous 24 hours, then the general discussion which followed a guide prepared by the researcher. Each session was concluded by using a given list of fruits and vegetables to be ranked according to those they love to eat, those they don't like so much but will eat; those they do not like and will not eat, and then any they may not know.

During the introduction, participants and interviewees were told that the purpose of the study is to help the Nutrition Section of the Ministry of Health in preparing nutrition education programme for the public. Care was taken not to mention that the study was to find out why their diet was low in fruits and vegetables as this would put some on the defensive and so may give false information to impress the researcher.

After the introduction, to help focus their minds on the topic, and to see the kinds of food eaten, participants and interviewees were asked to think about what they had eaten in the last 24 hours, and to write everything down. They were encouraged to write down the ingredients of a soup, stew, sandwich or whatever they had eaten. Also to write down any fruits they may have had, and also drinks and what was in the drinks. This information was later used in the discussions.

Although there were questions that needed answers, the manner of both interviews and discussions was conversational, allowing participants to talk around each of the areas of the questions. The researcher aimed at a good rapport and at building an atmosphere in which participants and interviewees felt comfortable and confident and free to express their ideas and views. They were assured there were no right or wrong answers; it was just a matter of sharing information about food.

The interviews and discussions were conducted using a semi-structured guide to give structure and focus to the discussions. General open-ended questions were posed to initiate discussion and participants were encouraged to talk around the area of each question. Questions were followed by more specific probes in order to elicit more in-depth information. The areas and questions covered in the interviews and discussions were:

- Food for school children.
- Their knowledge of 'healthy' foods and 'unhealthy' foods. That is, do they know which foods are good for their bodies and they should eat plenty of, and which foods are bad and therefore should be avoided or eaten in small quantities.
- Their knowledge of why these are good or bad. That is, what is in these foods (nutrients), which make them either 'healthy' or 'unhealthy'.
- Which kinds of food ('healthy' or 'unhealthy') make up most of their daily food intake. Why?
- Their knowledge of what these nutrients do to their bodies.
- Do they believe that some foods are good for their health and some are bad? Why?
- Their perception of foods. That is, what does food mean to a Samoan?
- The social values of food.

### Focus Group Discussions

Each focus group discussion lasted around an hour, while the interviews lasted around an hour and a quarter.

Three focus group discussions were held with women, one in a rural village, one in a peri-urban village and one with a group of women who work in the Yazaki factory near Apia, the biggest employer (of mainly women) in Samoa. The rural village was the researcher's village where it was easy to arrange a group of women. The peri-urban group was organised by the pastor's wife and the women were members of the women's committee. The contact person for the factory was the company nurse who organised women who work in the administration section of the company, as they have an hour for their lunchtime, while the production line workers have only 45 minutes.

Women, rather than men, were chosen for focus group discussions as women are the family members who prepare most of the family meals, and it is easier to get together groups of women than men. The rural village group had nine women, seven of them were aged between late twenties and early forties, one around fifty who has diabetes and a grandmother over seventy who was the only *matai's* wife and in whose house the discussion was held. The *matai's* (a titled head of an extended family) wife was not so much involved in the actual preparation of the food, like the younger women, but she has a major input in the decision of what is to be prepared. There were also nine participants in the peri-urban village group, including the pastor's wife. Their ages varied between 35 and 60. This discussion was held at the pastor's house. Eleven women were in the group at the factory, their ages ranging from 22 to 55. This discussion was held in a meeting room. None of the participants in the focus discussion groups had tertiary education. The younger women had varying levels of secondary education, but the older ones had only primary education.

Two observers recorded the discussion in the rural village group and three in the other two groups, while I facilitated the discussions. Two of the observers are nutritionists from the Nutrition Section of the Ministry of Health. They helped answer some of the more technical questions and they also gave further nutritional information to the groups at the end of the discussions. Nutrition



educational pamphlets and posters were given to participants, and planting materials were also given out for planting in participants' gardens.

### In-depth Interviews

Four men and six women were interviewed individually. Five were known to the researcher, while the other five were strangers. Two were approached at the out-patients' department of the Motootua hospital; one of them works there as a clerk while the other was waiting for a relative who was being seen by a doctor. The other three were interviewed at the market. The interviewees were chosen to give a spread across different levels of education, occupation, rural and urban, and sex, but they were all either the main person to prepare family foods or a decision-maker in what the family eats.

**Table 1. Characteristics of Interviewees**

Interview No.	Sex	Location	Education	Age group	Income level*
1	F	Urban	Secondary	40 – 55	Middle
2	F	Urban	Tertiary	40 – 55	Middle to high
3	F	Peri-urban	Primary	Under 40	Low
4	F	Rural	Primary	40 – 55	Low
5	M	Peri-urban	Secondary	Under 40	Low
6	F	Rural	Catechist's	Under 40	Low
7	M	Urban	Secondary	40 – 55	Middle to high
8	M	Urban	Secondary	Over 55	Middle to high
9	F	Peri-urban	Secondary	Under 40	Middle
10	M	Rural	Primary	40 - 55	Low

The first interview was conducted on the same day as the first focus group discussion, but it soon became clear it would be better to conduct the rest of the discussions first, and use the findings from those to formulate further issues to explore during the in-depth interviews. The rest of the interviews (9) were therefore done after the three group discussions. Opinions and ideas expressed during the focus group discussions were explored further during the in-depth interviews.

The researcher and all assistants were Samoan women and all discussions were conducted in Samoan.

## 4 Results

### 4.1 School lunches.

The main finding about school children's lunches is that hardly any children take lunches to school. Money is taken to buy snack foods from the school canteens, food stalls around the school grounds, or from the small shops near the schools, "because all the other children do it". Mothers reported that their older children used to take lunches to school, but the younger ones now just do not because they are ashamed to bring their family foods while the majority of other children bring

---

\* Income level is arbitrarily decided on visible signs of living, e.g. a good job, house, car etc.

money for shop foods. The parents know that the main foods their children buy in the shops or school canteens are Twisties, Bongos, donuts, ice cakes (frozen cordials) sausage rolls, hot dogs, salty plums, instant noodles which are eaten uncooked, and other unhealthy foods, but they seem resigned to the fact that “that is what children do these days”. Even the children in the rural village where we held a focus group discussion take money to buy unhealthy food during the morning break although the school is in the village itself and the children walk to and from school which finishes at 12.45 p.m.

#### 4.2 Food eaten in previous 24 hours.

The initial exercise where the focus group discussion participants and interviewees wrote down what they had eaten in the previous 24 hours showed that nearly all of them had no fruit or vegetables at all, and only a few had some very small amounts (one woman had an apple for lunch, another had tomato in her sandwich, and the third had *laupele* in her family stew the night).

#### 4.3 Knowledge of healthy and unhealthy foods.

Knowledge of what kinds of food are “healthy” or “unhealthy” is widespread. Fatty, sweet, salty and starchy food were given as unhealthy types of food, while fruit and vegetables were mentioned as healthy foods. Fish, shellfish and Samoan chicken are also believed to be healthier than other meats. This knowledge was learned mainly from either the community nurses or while they were at school. Some have seen posters and pamphlets in the hospitals and health clinics, but not all.

After the discussion on what kinds of food are healthy or unhealthy, participants were referred to the lists of food they had eaten the previous twenty-four hours. Amongst laughter and embarrassed giggling, they all agreed that what they had eaten in the previous 24 hours were unhealthy foods. This was followed by a discussion of why they do this. Why do we eat unhealthy food when we know what foods are better for our bodies? In other word, why don't we eat more fruit and vegetables?

4.4 Reasons given for eating unhealthy foods and not much fruit and vegetables may be divided into internal (depend on them) and external (out of their control) factors.

##### 4.4.1. Internal factors:

- i. Taste. People say fruits and vegetables do not taste as good as other foods:

*“If I was given the choice between saka kاپisi (boiled cabbage) and a steak, I'd much rather eat the steak.”*

*“I love cream buns, so if I have any money, I'd buy one of those. I don't really like pawpaw, I prefer supoesi.” (pawpaw stewed with coconut cream).*

*“My children just won't eat vegetables. The times I put some in our food, they carefully pushed them aside and ate just the meat and soup. So I gave up, it's a waste of my time and money.”*

*“Vegetables are boring, a fatty fasipovi masima (piece of salted beef) is much nicer.”*

ii. Can't be bothered or laziness:

*"There's plenty of pawpaws on the trees out there. The birds get more than we do."*

*"We have plenty of chokos and pumpkin leaves out there, but I'm just too lazy to go and pick them."*

*"It's much easier to just put a saimigi (instant noodles) in the soup than having to cut up a pumpkin."*

*"It's much easier to prepare unhealthy foods than healthy foods – all that cutting and chopping!"*

iii. Lack of experience in preparing fruits and vegetables in palatable recipes. Stir-fry, soup, boiling and frying are the only methods mentioned to be used for cooking vegetables. One mother said she would like to learn how to cook vegetables in ways that her family would like.

iv. Lack of understanding. Knowledge of what is in the foods that make them either healthy or unhealthy, and how these things affect the body is very sketchy. The relationship between fatty and sweet foods and diabetes is commonly known. They also know that fatty foods make you fat and salty foods give you high blood pressure, but little else is known about the relationship between unhealthy foods and other diseases. The division of foods into starch for energy, meats for body-building and fruit and vegetables for protection appears to be common knowledge. Many volunteered vitamins as one of the things in fruit and vegetables that help prevent diseases but fewer mentioned minerals, and hardly anybody mentioned fibre. Vitamin C is the most commonly mentioned vitamin and iron was the mineral mentioned by a few.

A woman from a very low-income family said:

*"I never buy any vegetables. How can I waste money when I need it for food?"*

The graduate interviewee who is a very successful businesswoman, but whose family diet contains very little fruit and vegetables said:

*"I knew fruits and vegetables were good for you, but I had no idea how. If I had more understanding, I may have been more willing to introduce them to my family's diet. Nutrition has never been one of my interests."*

She asked many questions on which nutrients help prevent which disease, and has since asked for information on which fruits and vegetables have various vitamins and minerals. She made notes and said she will try and get more fruits and vegetables to her family diet. She suggested that more information on which fruits and vegetables prevent which diseases should be given to everybody. She said just saying something is good for you is not enough. She also suggested that immediate relationships between foods and diseases should be made known rather than the long-term relationships such as the risk of cancer. For example, if parents are told that their children's brains will not develop properly if the children do not eat certain fruits and vegetables which contain a particular vitamin or mineral, the parents are more likely to act and give their children those fruits and vegetables than if they are just told that those fruits and vegetables are good for their children.

However, having knowledge is by itself not enough to change behaviour. The very first woman interviewed has diabetes and is very knowledgeable about all the foods that she should and should not eat and why. Yet, she still has cravings for fried turkey tails, and has for family dinner at least once a week, barbecued chicken, turkey tails, and/or mutton flaps, all highly fatty foods. She

explains that when she gets back from work in the afternoon, she is often too tired to cook, so either her children do the cooking or “if the wind is blowing from the direction of the barbecue across the road” then she will be tempted to buy a barbecue for dinner, and if she has enough cash, then they do. She confesses that she knows what she is doing is not good for her. Her oldest daughter has reminded her of how she has told them about how she missed growing up with a father because her father had died young from diabetes, and the daughter told her they don’t want to lose their mother. She also said she has seen her uncle in Australia who is on a dialysis machine and seen how painful the disease can be, yet she continues to eat foods she knows are not good for her. When asked if she knows why she does this, she evaded the question and started talking about how much fatter she used to be. She thanked me for talking to her about food because it reminded her again that she should think about what she should eat. She said what she needs is to be constantly reminded.

v. Fatalism:

*“It’s better to die satisfied.”*

*“Everyone will die, so why not eat what you want while you’re alive?”*

*“You can’t eat when you die.”*

4.4.2 External factors:

- i. Availability. They do not have fruits and vegetables in their gardens or these are not in the shops where they buy their food.

*“There are no fruits and vegetables in the store near our house where we do most of our food shopping.”*

*“There’s a lot of chicken, turkey tails and lamb flaps in the shops, we hardly go fishing now.”*

- ii. Accessibility. They may have fruit trees and vegetables in their gardens but the gardens are far away, or they do not live close to a market or a shop that sells fruits and vegetables.

*“There are plenty of pawpaws in our ma’umaga (plantation), but they are heavy to carry, and we have to carry the taro and banana for our food.”*

*“We have a lot of laupele (Hibiscus manihot) at my mother’s place at Sinamoga, (about six kilometres away) and I sometimes get some when we go there.”*

When asked why she did not grow *laupele* around the house, this woman said that they couldn’t because the pigs, dogs and chickens dug them up. This is one of the reasons Samoans traditionally planted food gardens inland, away from domestic animals.

- iii. Fruits are seasonal, so people will eat them if and when available. People eat lots of mangoes, or guavas, pineapples, or oranges, but only when they are in season and if they have a tree or if someone else gives them some. Fruits are bought irregularly when seen in the shop or market. Only one man mentioned making a specific effort (“in the last six months”) to buy fruits for his children on a regular basis. One woman said she would buy fruit if she sees it and if she has money to buy it.

- iv. Cost. They say fruits and vegetables are expensive compared to other types of foods.

*“In Lyn’s shop where I do most of my shopping, an apple costs a lot more than Bongles, so I buy my kids Bongos, and they much prefer those anyway, so what can I do?”*

- v. Traditions. Samoan diet has never had vegetables, except for *palusami*.

*“Samoans have never eaten much vegetables, right from when I was a little girl.”*  
*“Vaisalo, esi and supoesi are foods for the sick people, children and the old people with no teeth.”*

*“Even if I want to eat an apple or an orange, I don’t, because I bought them for my children. They need building up, I’m strong.”*

*“I’m not in the habit of cooking vegetables. Our family’s main meal is just mea ai aano ma mea lelei, that’s all.”*

- 4.5 Beliefs. A question was asked if they believed that fruits and vegetables were healthy foods while fatty, sweet, salty and starchy food are not so healthy. Although general nutrition knowledge is limited, all except one person agreed. She explained why she didn’t believe this.

*“My mother who has diabetes eats no meat, just fish and rice and fruits and vegetables, yet every time she has a check, her sugar level is still high. But for me, I eat lots of fatty meat and plenty of taro, and I love sweet tea, yet I don’t have diabetes. That’s why I don’t believe what you’ve just said”.*

This provided an opportunity for the nutrition staff member observer to give this woman advice on the risk she is running if she continues to eat the diet she says she has. One man has had proof which convinced him that it is important for his children to eat fruit and vegetables. He has been trying to ensure his children have a regular supply of fruit and vegetables, but only in the “last six months”. This is because the doctor at the hospital told him that giving the children fruits and vegetables regularly would reduce the times they get sick. He said that before that, they were always taking their children to the hospital because they were always sick, but since he has been giving them fruit regularly, they haven’t been sick. He has also been trying to make sure they have at least one vegetable a day. He does the family cooking and shopping while his wife works full-time. This man also has kidney stone problems. He claimed that his doctor told him that taro and sea foods, apart from fish, are not good for his kidneys. He says he has “been trying” to cut those out of his diet.

- 4.6 Social constraints. To investigate possible social reasons as to why they eat so little fruit and vegetables, they were asked what foods they would contribute to communal meals such as a *komiti* ‘s *toanai* (Sunday lunch for the women’s committee) or when hosting some village visitors. The foods contributed by all of them fall in the unhealthy category. There was much laughter and animated discussion on this issue. Why take unhealthy food?

The laughter was partly because they could not see how they could possibly turn up to one of those social gatherings with a plate of fruit or a salad. This was unthinkable. Why?

*“It’s a sign of disrespect. I’m the secretary of our youth group. How can a leader bring such food?”*

*“The others will say: “You eat your fruits then, don’t eat any of our good food.”*

*“I’m too ashamed to take such food because the others will think I’m crazy.”*

*“People will say I’m a palagi (white man).”*

*“It seems mean because it costs a lot less than a tolu pauna (three pound tin of corned beef) which is what others will bring.”*

*“It’s just not done.”*

*“It’s a big shame to bring such food to public gatherings.”*

The clerk interviewed at the outpatients’ department said that plates of pawpaw and coconut at social functions at work were always the last to be eaten, and often some is left over. She said that that is because “people just go for the cakes and sausage rolls”. So she doesn’t bother bringing a fruit contribution to work functions. But she takes fruit to the preschool where her daughter goes, because parents are told not to bring Twisties and Bongos but to bring fruit.

An interesting point that came up while discussing this, is that although community nurses give nutrition information, they do not follow up on this when the women’s committee feed them during their monthly visits. One village woman interviewed at the hospital used the nurses’ visit as the example of an occasion when she was asked to contribute food. She said that when it was her turn to help prepare nurses’ *ta’ita’i*, (the basket of food for the nurses to take home), she bought a three-pound *pisupo* (tinned corned beef). She said the food they serve the nurses has very little fruit and vegetables, apart from *palusami*.

All the above findings confirm most of the factors discussed in papers by Snowdon and Queded.

#### 4.7 Other Factors

Upon further probing, other factors became clear. These factors can also be divided into internal and external factors.

##### 4.7.1 Internal factors.

###### i. Lack of budgeting and meal planning

Only one man mentioned budgeting for food, but he said:

*“When our budget for that week is a little short, then we don’t buy any vegetables”.*

The rest of those interviewed, when asked about budgeting said they do not budget for food, they will buy whatever they can afford and/or feel like eating each day.

###### ii. The early introduction of vegetables to children is important.

The only two interviewees who said they always think of having at least one vegetable when preparing a meal tell of how they had vegetables in meals while they were children. One of them, a woman who grew up in Apia said they always had vegetables as a way of ‘stretching’ their *apa eleni* (tinned fish) or *fasi mamoe* (piece of mutton). They had a big family with her father as the only wage earner, so he used to pick up some vegetables on his way home from work, to fill their big pot of soup or stew so that everyone can have something to *ina’i* (complement) their *saka misiluki* (boiled lady’s fingers bananas). She added that that was in the 60s when a bunch of

cabbage or a pumpkin was six pence. They cost a lot more today. The other interviewee who had vegetables as a child lived with an *afakasi* (part-European) family, whose father always said they must eat vegetables. So from that family, he learned to like the taste of pumpkins, pumpkin tips, beans and other vegetables, so now he feels his meal is not complete without at least one vegetable. The man mentioned above who has in the last six months been trying to ensure his children eat fruit daily and have at least one vegetable in their dinner, tells of how his oldest son (14) just does not eat any vegetables at all, his daughter (5) eats raw carrots and cucumber but not capsicum which they have not had often, but his three-year old son eats capsicum and any raw fruit or vegetable he is given.

iii. People are conservative about eating foods they are not used to.

This is more obvious with those who have not lived away from their villages or outside of Samoa.

*“I don’t like it. I’ve never had it before”.*

*“Samoans have never eaten those foods before, why should we eat them now?”*

iv. People are not confident about cooking foods they are not familiar with.

One woman said that when she cooks a curry, the only vegetables she adds are potatoes and carrots because those are what were in the curries she has eaten in the restaurants in Apia. She added that seeing potatoes and carrots are expensive and not so common, she does not often bother with those when she cooks her ‘usual’ curry. Another woman showed surprise when told that eggplant can be added to just about any meat. She said the only way she had seen eggplant used was for cooking *eleni* (herring), so that is the only way she cooks eggplants.

v. The nutritional value of food is rarely a consideration when preparing food.

Taste and amount to satisfy the family are the main concerns of the cook. However, there is knowledge that some foods are ‘good for you’, and others are ‘not good for you’. There is also knowledge of which food is good for which part of the body or for some ailments. One interviewee said:

*“I don’t eat pork and other rich food as I am old now, I used to eat lots of those when I was younger. They are just not suitable for the body now”.*

*“I like to eat a fruit like esi (pawpaw) or mango in the morning when my stomach is not moving” said another interviewee.*

vi. Samoans harvest or buy food on a daily basis.

A woman who works in town said she does not buy food in bulk because the girls who do the cooking would cook large meals just because there is a lot of meat in the refrigerator. So she said she controls the food by buying what is to be cooked for dinner on her way home after work, and she buys just enough for that night.

A woman whose husband has a very low income said:

*“We just don’t have enough money to buy food for more than one day. We don’t have enough to buy a mea lelei for every night.”*

One village woman told of when she has had some bulk groceries from her children in New Zealand. These did not last long, because the neighbours saw the goods being brought home on the bus, so she had to give some to them.

*“I couldn’t refuse when a child comes from next door for some sugar for their tea, because they saw the sack of sugar, and it is not right to save it while my neighbours go hungry.”*

#### 4.7.2 External factors.

i. Giving money to fulfil social obligations takes priority over food for the family.

One mother said:

*“We will eat just rice and tea tonight because my son has just taken the last 20 tala I had in my purse for the peleti (monthly or fortnightly contribution) for his faife’au (pastor).”*

ii. Cooking the family food and decision-making regarding what the family eats are rarely the full responsibility of one individual. Traditionally, preparing the starchy staple foods were the responsibility of men who cooked them in the *umu* (stone oven) away from the family house, while the preparing of the protein foods was the domain of women. This division still exists more in the villages than in the urban areas where *umu* are not made as often. However, starchy foods are now more often cooked in pots in both rural and urban areas. The cooking of the staples has therefore on the whole become the responsible of women. However, as part of the socialising of Samoan children includes food preparation and cooking, and obtaining or buying of food items, often these tasks now fall on young adults, especially girls, even if the decision on what to cook remains the prerogative of the mother, and sometimes the father as well.

4.8. Rating fruits and vegetables. Table 2 shows how the focus group discussion participants and the interviewees rated fruits and vegetables. Three participants did not seem to have understood the instructions of the exercise properly as they put numbers along side just a few fruits and a few vegetables. Their answers are never the less included in the table below. This rating of fruits and vegetables according to whether (i) they like them, (ii) would eat but not really like them, and (iii) not eat at all or not know, shows that most of them like most fruits and vegetables. Apart from the wing bean, pigeon pea which most people did not know, and rambutan which many did not know, the only commonly known ones which more people did not like, but would still eat, than those who like them are soursop and starfruit. The rest of fruits and vegetables in the list are liked by most. This must mean that it is not so much that people do not like fruits and vegetables that stop them from eating them, it must be factors such as availability, accessibility, cost, culture and others as discussed above, or a combination of a number of these.



**Table 2**                      **Fruit and Vegetable Preferences**

<b>Vegetables</b>	1	2	3	4	<b>Fruit</b>	1	2	3	4
Chinese cabbage	29	2	0	0	Mango	28	1	0	0
Head cabbage	28	3	0	0	Soursop	9	13	3	2
Long (snake) beans	20	5	3	0	Pawpaw	26	2	0	0
Short (French) beans	17	11	2	2	Vi	19	8	1	0
Laupele (tree spinach)	20	6	2	2	Orange	23	5	0	0
Eggplant	17	8	2	1	Apple	25	2	0	0
Tomato	23	4	1	0	Pear	21	5	1	1
Cucumber	25	4	0	0	Mandarin	24	5	0	0
Carrot	20	6	1	1	Rhambutan	6	7	2	13
Water cress	22	7	0	0	Ripe banana	22	5	0	0
Pigeon pea	0	1	0	26	Water mellon	21	5	3	0
Wing bean	2	1	0	25	Lemon	12	9	6	0
					Star fruit	10	12	3	3

Legend:

1. Like it a lot.
2. Doesn't like it very much but will eat it.
3. Doesn't like it and will not it.
4. Don't know it.

## 5 Conclusion

This study set out to investigate reasons for the very low consumption of fruit and vegetables among Samoans, which has been found in several surveys. The study used quantitative methodology to investigate these issues, which are not easily revealed with the use of quantitative methods. Focus group discussions and the use of in-depth interviews enabled the author to probe deeper to find further reasons why Samoans do not eat much fruit and vegetables.

The factors that influence the consumption of fruit and vegetables obtained from the focus group discussions and from further probing during the interviews are arranged into two groups: internal and external. Internal factors are those which depend on the people concerned, while external factors are those which are out of their control.

External factors such as food availability, accessibility, cultural obligations and family income are of primary importance because it would be difficult for people to maintain a balance diet since the food required would not be available. Internal factors such as knowledge, self confidence, skills, and habits all determine how people behave. It is crucial to understand why people behave the way they do. In general, people have valid reasons (in their opinion) for behaving in certain ways, in this case, why they don't eat enough fruit and vegetables. It is important to know what these reasons are before we can hope to make any change in their behaviour. Both the internal and external factors are should be considered as they all do influence behaviour patterns.

The findings strongly suggest that for a nutrition promotion campaign to be effective, it must be based on an understanding of knowledge, attitudes, beliefs and practices related to food (internal factors). If a campaign is based solely on the Western (physical/biological) nutrition theories and ignores what food culturally means to Samoans, then such a campaign is bound to be less successful than if it takes into consideration how Samoans view food. Understanding the basis of some entrenched practices regarding food can help campaign planners to strategise to change such practices.

There is also a need for further nutritional information and education relating specific fruit and vegetables to specific diseases, and also more demonstrations of how to handle, prepare and cook palatable dishes containing vegetables. Targeting children through encouraging parents to introduce fruits and vegetables to them while young and through having school canteens and shops sell fruit for snacks is recommended.

It is clear from the results that a complex combination of factors influence people's behaviours. The rating of fruit and vegetables exercise showed that most of the people interviewed responded that they like a range of commonly available vegetables, so to say that Samoans generally do not like fruit and vegetables is probably erroneous to explain the low levels of consumption. It is also dangerous to generalise broadly as Samoans are currently going through much change, all at different paces from each other, so that even the rural and urban dichotomy cannot be accurate for any generalisation.

Therefore, a campaign to change eating behaviours in Samoa should be multi-focussed. Different groups should be targeted with different programmes using different strategies and methodologies.

These conclusions are based on the results of the qualitative research that was carried out in October/November 2004. Due to the qualitative methodology used, the findings are not intended to be representative for the whole of Samoa, but provide an in-depth analysis into the knowledge, attitudes, beliefs and practices of those involved in the discussions.

## 6 Recommendations

The findings of this study recommends the following to be considered when designing an effective promotional campaign to increase fruit and vegetables consumption in Samoa:

- Understand the Samoan view of food. As there are many differences between Samoan and Western values, Samoan food values need to be understood and considered as they may counteract the message for improving nutrition and health. This includes the concept of food (social vs. physical/biological aspects), and Samoan food classifications. Entrenched habits, which are part of Samoan food practices must also be understood and considered.
- Provide more meaningful nutritional information and education  
Information on the nutrients in different foods and their relationships to functions of the body and to diseases should be included in educational materials and workshops. People want to know the more immediate, rather than long-term implications of different foods. Parents are more likely to act if they understand how foods can improve the health of their children. Furthermore people and in particular their leaders (traditional, religious, political) should be informed that vegetables are “not only for the sick” but important “to keep from becoming sick”
- Encourage parents to introduce fruits and vegetables to children while they are young.  
This is when the basic eating behaviour is established. To introduce dietary change later is more difficult. Parents should also try to plant fruit trees and vegetables together with their children to ensure a free supply to the family.
- Promote healthy eating in schools  
Encourage school canteens and shops near schools to sell fruit and ban/reduce the sale of unhealthy food. Many parents are giving in to their children’s peer-group pressure and are giving money to children to buy lunches. A school canteen policy could help establish guidelines for healthy food in schools.
- Introduce vegetables in small quantities and as part of a *mea ai lelei* (meat dish). Trick the family into getting used to unfamiliar vegetables. It takes time to familiarise taste buds with previously unknown tastes, so introducing different vegetables in small amounts concealed in the familiar taste of meat will build up taste acceptance of vegetables by those who are not familiar with them. Tasty recipes are central to the acceptance of unfamiliar vegetables.
- Conduct demonstrations in handling, storing, preparing and cooking fruit and vegetables.  
These should be given to different groups of people who are mainly involved in cooking family foods. Foods produced in these demonstrations must be tasty, but not with tastes which are so exotic that they will not be accepted. Recipes must be pre-tested before they are used in demonstrations.

- Use role models to raise the value and importance of fruits and vegetables  
Health workers should not only give nutrition information, but must be role models eating healthy foods. Community nurses must use the opportunity of the meals they are given during their visits to villages to demonstrate and encourage women to prepare dishes with vegetables to be shared during communal meals as well as in their own family meals. Moreover, the “social value” of fruits and vegetables need to be raised if inherent social constraints in Samoan society to fruit and vegetable consumption are to be overcome.

## 7 Glossary

<i>apa eleni</i>	Tin of herrings. A generic term for all tinned fish of similar quality.
<i>esi</i>	Pawpaw
<i>faalavelave</i>	Any social occasion where one is required to contribute money, fine mats, and food.
<i>faato'aga</i>	Plantation.
<i>fai'ai</i>	Coconut milk either wrapped in leaves or in a coconut shell and baked in an <i>umu</i> .
<i>asi mamoe</i>	Piece of mutton or lamb.
<i>fiapalagi</i>	Aping European ways
<i>koko Samoa</i>	Cocoa beans roasted and pounded. A drink made of this with boiling water and sugar.
<i>kokoesi</i>	Same as <i>suaesi</i> but flavoured with <i>koko Samoa</i> or cocoa.
<i>ina'i</i>	To accompany or complement.
<i>taamu</i>	Giant taro
<i>laumoli</i>	Lemon leaf. A tea made of a lemon leaf with sugar.
<i>laupele</i>	<i>Hibiscus manihot</i> . Tree spinach.
<i>loifa'i</i>	A dish of sweet ripe bananas wrapped in banana leaves and baked in the <i>umu</i> .
<i>mea 'ai 'a'ano</i>	Starchy foods.
<i>mea 'ai lelei</i>	Literally good food, but it refers to meat dishes.
<i>misiluki</i>	A variety of banana commonly known as Lady's fingers.
<i>miti</i>	A liquid relish of salted diluted coconut cream, sometimes with onion and/or chilli
<i>palusami</i>	Coconut cream in taro leaves wrapped with banana leaves and baked in an <i>umu</i> .
<i>peleti o le faifeau</i>	Monthly or fortnightly contribution to the pastor.
<i>pisupo</i>	Tinned corned beef.
<i>poi</i>	Ripe bananas mashed with coconut cream flavoured with lemon leaves.
<i>povi masima</i>	Salted beef
<i>saimigi</i>	Instant noodles
<i>saka</i>	Boiled starchy staples. Boiling food.
<i>saka kاپisi</i>	Boiled cabbage.
<i>suafai</i>	A dish made by boiling ripe bananas then adding sago or manioc starch and coconut milk, flavoured with lemon leaves.
<i>supoesi</i>	A dish made the same as <i>suafai</i> but using ripe pawpaw instead of bananas.
<i>ta'ita'i</i>	A basket of food taken to a feast or away from a feast.
<i>tolupauna</i>	A three-pound tin of corned beef.
<i>umu</i>	Samoan ground oven. Also the food cooked in such oven.
<i>vaisalo</i>	A porridge type food made by cooking crushed soft green coconut flesh thickened with some sago or manioc starch.

## 8 References

- Englberger L, Marks GC, and Fitzgerald MH. Factors to consider in Micronesian food-based intervention: a case study of preventing Vitamin A deficiency. *Public Health Nutrition*: 2003; 7(3): 423-431.
- Kramer A. 1903. *The Samoa Islands*. Vol 2. Translated by Verhaaren T. 1979. Auckland, New Zealand. Polynesian Press.
- Ministry of Health, Samoa. 2002. STEPS survey.
- Quested C. 2004. Programmes to Promote Fruit and Vegetables in Samoa. Unpublished paper.
- Quested C. 2004. Report on a '5 a Day' Symposium and Post Symposium Workshop, Christchurch, New Zealand, 8-12 August, 2004.
- Quested C. Factors Influencing Fruit and Vegetable Intake in Samoa. Undated and unpublished paper.
- Snowdon W. 2004. Factors influencing intake of fruits and vegetables in the Pacific islands. Unpublished paper.
- Whistler, A. 2000. *Plants in Samoan Culture: The Ethnobotany of Samoa*. Honolulu, Isle Botanica.

## **Appendix 1: Discussion guide**

### **Focus Group discussions**

#### **1. Introduction**

After greetings, I shall begin with something like this: The Nutrition Section of the Health Department want to find out how they can improve their methods of educating people to change their eating behaviours to reduce illnesses. We're here to work with you to find out what you know about the value of food for our bodies, and how what we believe and do make us eat foods, which may be making us healthy or unhealthy. We will take this information to the Health Department, which can use it to give us some good messages that may help us change our eating habits so we can be healthier. We will start by writing down everything we each ate in the last 24 hours. There is no right or wrong or bad or good about this. You don't write your name on your paper, so nobody will know what you had. We will look at what you'll write and use them, but nobody will know which paper belongs to which person, so there's no need to write down something you didn't eat, or not write down something you did eat. It is important you be honest about this.

#### **2. 24 hour diet recall**

Write down everything you ate in the past 24 hours. If you had a stew for dinner last night, write down everything that was in the stew, plus anything else you had for dinner. If you had a sandwich, say what made up the sandwich. If you had a fruit, say what the fruit was, etc. After collecting these sheets (give them 5 minutes), then start the discussion, by asking the questions below. Probe each question further – depending on the answers.

#### **3. Discussion**

##### Knowledge:

What kinds of food will make you healthy?

How do these make you healthy?

What kinds of food will make you unhealthy?

How do they make you unhealthy?

What is the most unhealthy method of cooking food?

Why is this so?

What are better methods of cooking?

What foods should you eat less of?

What foods should you eat more of?

Where did you learn these ideas from? School, parents, friends, TV, radio, magazines, newspaper, health officers, agriculture officers etc

Attitudes: Which of these kinds of food do you eat the most?  
Why?

Beliefs: Do you believe that certain foods make you healthy and others are bad for you?

Practices:

Do you grow any of your own food? What do you grow?

What foods do you buy?

Who is responsible for buying any food you need to buy?

Who is responsible for preparing your food?

Who makes the decision as to what food must be bought and prepared?

What is this decision based on? Cost? Taste? Availability? Family preference?

Individual preference?

How often do you buy vegetables and fruits?

Do you eat vegetables daily?

Are vegetables and fruits part of your daily diet?

Each of the questions above must be probed further, depending of the responses.

#### **4. Ranking fruits and vegetables**

After the discussion, then hand out the list of vegetables and fruits. Explain how to put numbers 1,2 or 3 along each of the fruit and vegetables on the list. 1 being for “Love to eat”, 2 for “will eat reluctantly” and 3 for “won’t/can’t eat” Give them 5 minutes to do this.

Vegetables	Fruits
Chinese cabbage	Mangoes
Round cabbage	Soursop
Long beans	Pawpaws
Short beans	Green coconut
Laupele	Vi
Egg plant	Avocado
Tomatoes	Oranges
Cucumber	Apples
Capsicum	Pears
Carrots	Mandarin
Peanuts	Rhambutan
Water cress	Rowlina

#### **5 Closure**

Give them a chance to ask any questions.

Are there any particular nutritional information you want?

Do you have any suggestions on how to improve sources of nutritional information?

Do you have any preferred ways of receiving nutrition information?

What do you think will help make you and your families eat more vegetables and fruits on a regular basis?

Do you honestly believe you want to eat more vegetables and fruits after today’s discussion? This is a closed question, but it may be interested to see if any still say they don’t think they will. Then ask what would make them change.

Summarise findings and ask if they agree with them. Thank you and good bye.