



Secretariat of the
Pacific Community
March 2000
ISSN 1022-2782

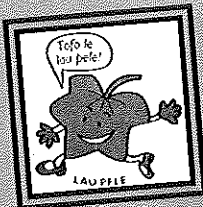
P I N

PACIFIC ISLANDS NUTRITION

this issue ...

■ Tuvalu:
NCD
Policy

Samoa:
Healthy
food can
be fun,
too!

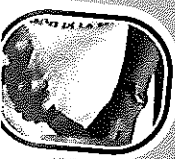


■ Chuuk:
promotes
fortified
instant
noodles

New
Caledonia:
YAMS: a
guide to 12
varieties



■ New Zealand:
changes in
food
consumption
patterns



UNICEF's
attention
on the duration
of exclusive
breastfeeding



■ The prevalence of
malnutrition
in urban and rural school
children in Fiji:
a cross sectional study



Target primary and secondary
school children

Editorial
MARCH 2000

The New Millenium: WHERE TO FROM HERE?

are able to clearly explain or
articulate?

- ▶ What strategies have we been using? How seriously have we attempted to assess their effectiveness, singly and collectively?
- ▶ What population groups have we been targeting? Are we focusing on achievable goals?
- ▶ What have been the strengths and weaknesses of our past programmes?
- ▶ How might we improve our focus and our approaches in order to make a real difference in our communities?

An update of "Lifestyle Diseases in Pacific Communities" presented at the 1999 SPC Regional Nutritionists' Workshop in Auckland New Zealand clearly indicated that the health of Pacific Islanders has not improved despite half a century of nutrition awareness and education programmes. The epidemiological evidence presented showed non-communicable or lifestyle diseases have progressively increased over the past two decades.

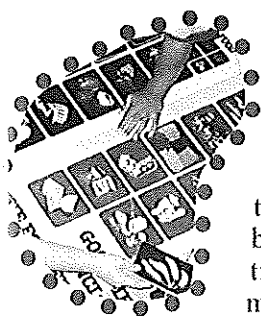
We need to ask ourselves the hard question: *WHY have non-communicable diseases among our people continued to get worse despite so much effort?* Isn't it time we nutrition health professionals critically re-examined our efforts?

We need to ask ourselves:

- ▶ Where are we coming from? What is our philosophy of health education? Do we have one we

It seems to me we need to pause to assess what we are doing. If we don't, we are likely to continue to spin our wheels in the sand and achieve very little.

We have become expert at conducting epidemiological surveys and rattling off risk factors associated with non-communicable diseases to those we presume to be listening. But, do we ever stop to consider what the



tables of data we have collected really mean? And what are we doing to translate these tables into meaningful behavioural information? What do they mean in terms of an average Pacific individual or family's daily behaviour?

We know that many of the risk factors, as well as the lifestyle diseases that result, appear to be inter-related. While factors like age, gender and genetic predisposition contribute, these are beyond our power to control. However, eating patterns, the amount of physical activity we engage in, smoking and alcohol consumption – in other words, our lifestyle, are all causally associated with problems of obesity; and obesity is an important risk factor in hypertension, heart disease, and diabetes (with complications), the major killers of our people.

The good news is that obesity is a problem we can control. The bad news is that health risk behaviours among adults are enormously resistant to change. We also know that the use of fear to motivate 30+ year olds to change their basic lifestyle, is generally an example of too little, too late. If we are to really make a difference, then lifestyle and nutrition education needs to seriously begin at primary and secondary school. We need to target our children, who are the hope of our future. We need to place a greater emphasis on **preventive strategies**. This means teaching good nutrition and a healthy lifestyle to our children, rather than 'band-aiding' adults after the 'damage' has been done. The epidemiological evidence presented to the Regional Nutritionists' Workshop

should be a wake-up call to all of us. The data clearly shows our current strategies are not working. Yet, what are we doing about it?

To summarise and conclude:

For the first 50 years our focus was largely on manifest diseases, adults and the use of fear to change behaviour. The evidence suggests our

focus on the pre-manifest whose lifestyles are less resistant to change).

When developing strategies for **intervention**, we have generally focused on **individual diseases**. I suggest we need to emphasise **prevention** and health with a focus on **lifestyle as a whole**.

Our nutrition and health education materials have tended to be very 'biological' in orientation. If we are to have an impact, we need to key them more deliberately into Pacific food (nutritional) knowledge and custom.

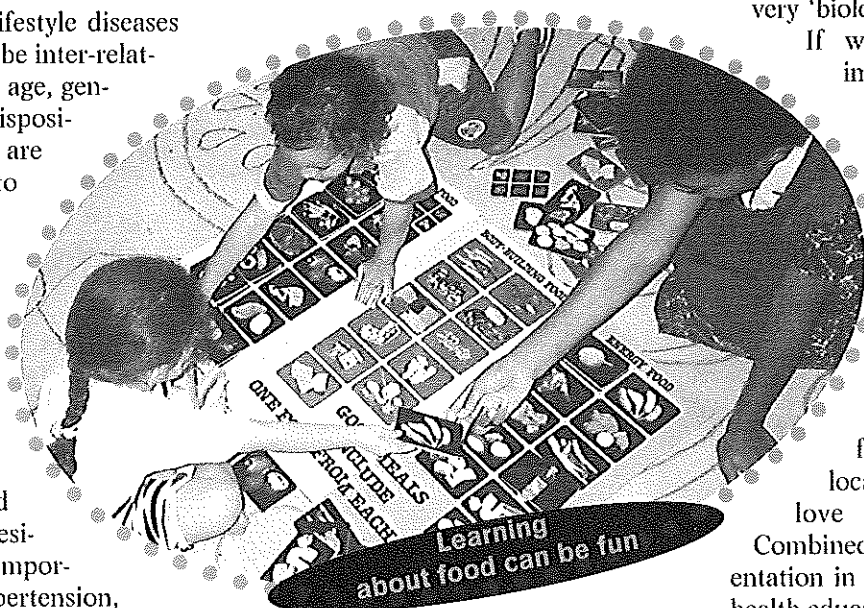
I suggest it is time we built on our Pacific strengths: our local knowledge of food (nutrition), our local customs and our love for our children.

Combined with a positive orientation in food (nutrition) and health education, I think we may succeed in turning around the current negative trend in lifestyle diseases in the Pacific.

While we still need to target adults, the evidence indicates an urgent need to adopt new strategies. As *Pacific nutrition health professionals*, what do you think?

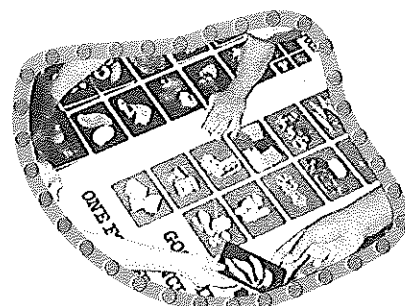
Drop me a line commenting on the above and/or share some of your ideas. I look forward to hearing from you.

*Jimaima Tunidau-Schultz
Community Health Programme
SPC Noumea*



efforts in the Pacific have been minimally effective, and in some instances, we appear to have gone backwards as far as non-communicable diseases are concerned. The use of fear and negative examples to change resistant adult behaviour is not working. For 2000 and beyond we need to reassess our focus, our strategies and our emphasis.

Epidemiological studies and etiological information helps us to identify, describe and clarify what exists within our communities. Now, we need to take the next step and apply insights and strategies from psychology and community health to develop and implement effective preventive education programmes among those most open to change, our children. (in more 'technical' language, we need to



TOFA SOIFUA, MOCE MADA, TATA, 'ALU A,... BOB

After three years with SPC Nutrition services, Robert Hughes (Bob) left at the end of February. He was recruited as a Nutritionist/Epidemiologist in 1997. In his capacity, he has been instrumental in completing a number of important works. These include the Infant Feeding and Growth Monitoring Surveys in the Cook Islands and Tonga, the National NCD Survey in Vanuatu, the updating of the document *Lifestyle Diseases in Pacific Communities* (in press), and others.

Bob, your Nutritionist colleagues in the Islands will miss you.

Underneath that easy-going manner of yours lay great enthusiasm in

whatever work you did and especially in public health nutrition. So much so that you couldn't stay away from your desk even at weekends. You were an honest worker who liked to have everything done by yesterday! For those of us that have worked closely with you at SPC – well, the office will be pretty quiet without you!

Bob joins Terry at the Nutrition Programme, based at the Royal Brisbane Hospital, University of Brisbane.

We wish you and your good wife, Maricel, all the very best.

Bob's new e-mail address:
rh@nutrition.uq.edu.au



Robert Hughes (Bob)

1

ANOTHER NUTRITIONIST LEFT SPC



Dr Terry Coyne

Dr Terry Coyne who had been working during the past year on a special project updating the publication *Effect of Urbanisation and Western Diet on the Health of Pacific Island Populations* published by SPC in 1984, left SPC at the completion of the project last September. She was the original author and has now completed the mammoth *Lifestyle Diseases in Pacific Communities*.

Terry has now joined the Nutrition Programme, University of Queensland. We wish her all the best.

3

TUVALU NON-COMMUNICABLE DISEASES POLICY

The National Health Policy of Tuvalu on the Prevention and Control of Non-communicable Diseases (NCDs) is to facilitate and support actions which prevent the development of Non-communicable Diseases, prevent or control the development of complications and improve their management and treatment.

Goal

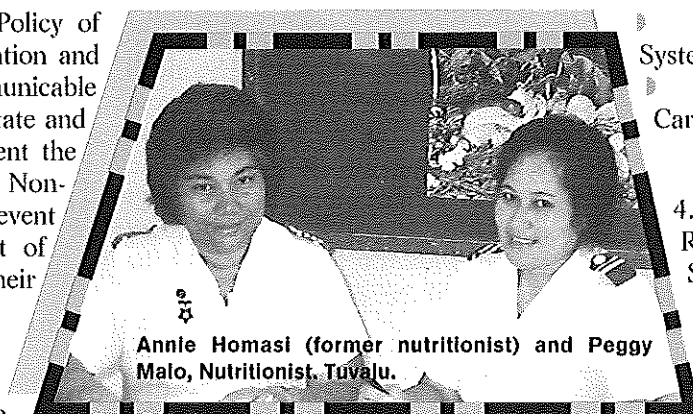
The goal is to reduce the preventable and treatable burden of NCDs in Tuvalu through complementary Primary, Secondary and Tertiary Prevention strategies directed at the population of Tuvalu as a whole and at individuals within the population.

Main Objectives

1. Reduce the prevalence of Non-communicable Diseases.
2. Maintain control over existing Non-communicable Diseases.
3. Prevent the development of Non-communicable Diseases amongst the population of Tuvalu.
4. Provide Acute Care as well as Secondary Prevention for existing Non-communicable Disease cases.

Strategies

1. Reduce the prevalence of known risk factors:
 - High and Heavy Smoking Prevalence
 - Unhealthy Dietary Habit



Annie Homasi (former nutritionist) and Peggy Malo, Nutritionist, Tuvalu.

▸ Sedentary Lifestyle

2. Establish specific Primary and Secondary Prevention programmes for specific NCDs that are more prevalent in Tuvalu

Diabetes mellitus (Nutrition Programme, Physical Activity, Anti-Smoking)

▸ Obesity (Nutrition Programme, Physical Activity) Hypertension

(Nutrition Programme, Physical Activity, Anti-smoking)

▸ Cervical Cancer (Cervical Screening Programme).

3. Establish a network for providing efficient and effective acute-care services for NCDs (Secondary Prevention with population-based and individual-based activities)

▸ Tele-medicine Referral System

▸ Family Maternal (FM) Care Programme

4. Establish a Research and Information System to determine the incidence and prevalence of Non-communicable Diseases and follow up cases to assess the effectiveness of interventions.

Target Group

Due to the chronicity of these diseases the target group would be the general population with specific strategies for the different age groups and population groups with specific problems or ailments.

Key Performance Indicators

▸ The most readily available and measurable indicator for a Programme on the Prevention and Control of NCD would be the reduction in death rates caused by Coronary Heart Disease (CHD), Stroke (CVA), and Diabetes).

▸ Due to the chronicity of these diseases, measurement by death rates will not be apparent for years.

▸ Specific targets aimed at reducing the complications and hospital admission rates as well as readmission rate for Uncontrolled Diabetes and Hypertension would be the indicators that would measure success or failure.

NON-COMMUNICABLE DISEASES ACTION PLAN: HEALTHY ISLAND FRAMEWORK (DIABETES MELLITUS CARDIO-VASCULAR DISEASES)

Goal

To reduce the incidence and prevalence of Diabetes mellitus and Cardiovascular diseases in Tuvalu.

Policy

It is the policy of the Ministry of Health to create awareness amongst the Island Councils and the Community on Non-communicable Diseases issues and provide support and assistance in developing healthy living and lifestyles to reduce the incidence and prevalence amongst the population of Tuvalu.

The Primary & Preventive Health Services Unit is the Central Office responsible for this staff support. All Ministry of Health Units as well as other government ministries and the community shall be responsible for implementing programme activities.

Five-year

Objectives for NCD

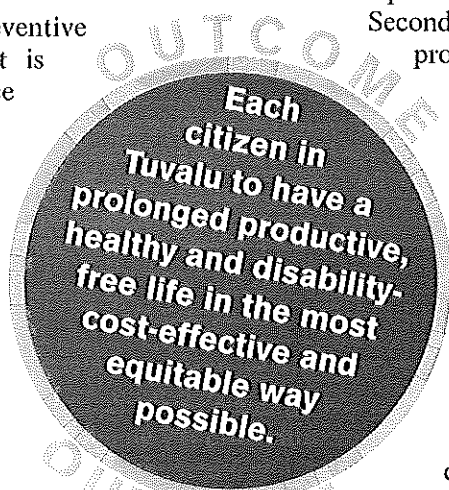
(Diabetes mellitus and Cardio-vascular Diseases)

1. Reduce morbidity and mortality due to Hypertension, Cardio-vascular Diseases and Diabetes mellitus
2. General Population to enjoy a disability-free life

3. Establish a Healthy Lifestyle regimen through the Healthy Island Project.

Performance Indicators

1. Reduce the Incidence and Prevalence of Diabetes mellitus and Cardiovascular Diseases in Tuvalu by appropriate and effective Health Promotion, Primary Prevention and a Protective Control Programme.
2. Improve Institutional (Primary and Secondary Care) and Domicillary Care of patients.
3. Develop and implement Secondary Prevention programme.



Outcome

Each citizen in Tuvalu to have a prolonged productive, healthy and disability-free life in the most cost-effective and equitable way possible.



*Contributor: Peggy Malo,
Nutritionist, Ministry of Health and
Human Resource Development,
Funafuti, Tuvalu*

Stickers that were distributed
(maukeni is pumpkin, togotogo is pennywort):

Island News

SAMOA

DEPARTMENT OF HEALTH

Healthy Food can be Fun, Too!

Who said eating nutritious food can't be fun? In association with World Food Day, the Nutrition Centre organised a series of special activities to promote fruits and vegetables. The highlights of the various events, aimed at children 8-12 years of age, were a sandwich competition and the distribution of eight different food stickers. To increase public awareness, a media alert,

A wide variety of foods were used including plantains, breadfruit, lobster, *pele*, and *tugane*, a type of shellfish. The judges were impressed with the creativity and tastiness of the recipes (see winning recipe below). Articles describing the competition and the 1st prize recipe were included in the children's page of the newspaper and the December issue of the Nutrition Centre's quarterly newsletter. The winning recipe was made by a team of four girls: Katerina Tanuvasa, Olimapeta T. Kamisis, Filipina Niko, Jouna Ollofchristen, with teacher Tautala Tapuwai, Lepea Primary School.

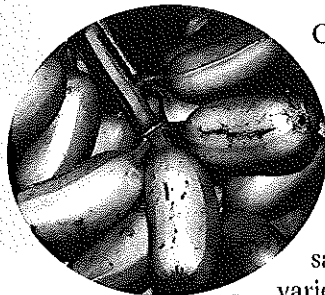
Fai Samoa (plantain) Sandwich (the winning recipe)

Ingredients:

- 2 large green plantains, cooked
- 2 cans of tuna, oil poured off
- 1/2 cup mayonnaise
- 2 onions, chopped
- 4 teaspoons black pepper
- 8 winged beans, chopped
- 10 pennywort leaves, chopped
- 1/2 cup spring onions, chopped
- 1 cup tomatoes, chopped
- 2 cups watercress, chopped

Method:

- Slice cooked banana in half, lengthwise.
- Mix tuna, mayonnaise, onions, pepper and spring onions together.
- Spread each half of sliced banana with tuna mixture.
- Place pennywort, winged beans, tomatoes and watercress on top and it's ready to serve!
- Serves 2-4 people.



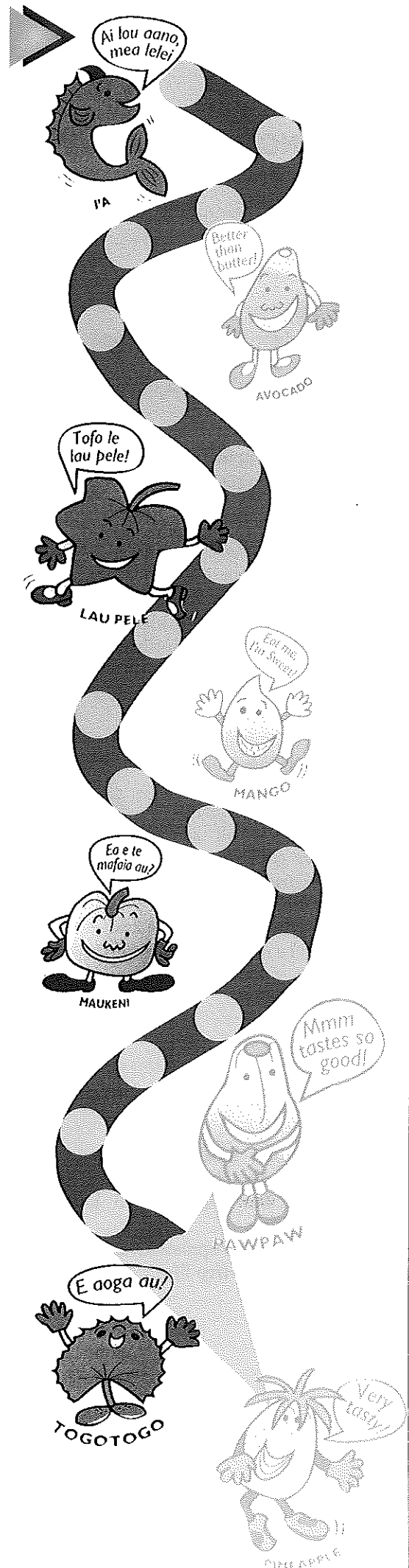
press release and media kit on fruit and vegetables were also made available to all media in Samoa.

The most popular activity was the *First Annual Sandwich Competition*, the goals being to have fun but also to promote local food as healthy snacks for school children. Forty-five children from six different schools participated.

fruit or vegetable.

The activities proved very popular and the Nutrition Centre hopes to expand on them in the upcoming year.

Contributed by Kerri Calvert Faamoe,
Senior Nutritionist, Nutrition Section,
Department of Health, Samoa
The contributor is also a PINDA
Executive, representing Polynesia



Chuuk promotes fortified instant noodles

Chuuk has very high rates of vitamin-A deficiency linked to low intakes of vitamin-A rich foods, high worm loads and high infection rates. Whilst Chuuk now has a well-established vitamin-A capsule campaign for children, this still leaves large sections of the population unprotected and with dangerously low levels of vitamin A.

The diets in Chuuk have changed dramatically over the last decades, with a shift away from traditional local foods towards imported foods.

A small survey conducted on Weno showed that most women were eating instant noodles regularly – at least twice per week. Instant noodles are a common snack food and meal item for most families particularly on Weno and the lagoon islands, and for all ages and are even eaten dry as a snack.

The result is a diet characterised by instant noodles, rice, tinned meat and fish. This diet is greatly lacking in many nutrients including Vitamin A.

As a long-term solution, efforts are being made to help educate people to grow more of their own foods and to eat more local foods. However, to reverse the current trend will not be easy and will take time, effort, dedication and commitment on everyone's part to make the change a reality.

As a short-term solution, Andita Meyshine, vitamin-A campaign and MCH programme co-ordinator in Chuuk, along with UNICEF Health & Nutrition Adviser in Chuuk, decided that it might be possible to persuade those eating instant noodles to switch to the fortified varieties – those containing from 60 - 600IU International Units of vitamin A per one serving.

Fortified instant noodles are imported from countries such as the Philippines, USA, Korea and Taiwan. A campaign was therefore devised, working with the local stores. A quick survey showed which stores were selling the fortified brands (only those brands containing more than 140IU were considered to be sufficiently fortified to promote). They were then approached to ask for their support in the promotion. All were happy to help.

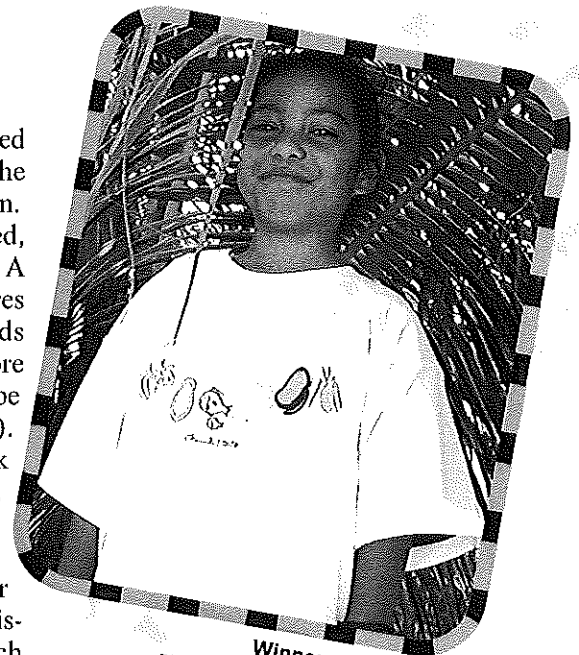
During the month of November 1999, the four stores involved displayed posters highlighting which brands were fortified, along with posters promoting adding nutrient-rich ingredients to fortified instant noodles e.g. eggs, fish, green leaves. Any person buying a packet of these fortified instant noodles received a raffle ticket.

By the end of the month a total of 1000 tickets had been given out. Winners were announced on the radio and received either a hat or T-shirt displaying information on vitamin A.

Unfortunately the stores involved were unable to give us data on whether sales of those brands had increased during the month. However they all reported people coming in asking for the raffle tickets and finding out which brands had the vitamin A added.

It is planned to further promote these vitamin-A fortified instant noodles using coloured stickers to educate people about which ones are fortified. Future plans include working in partnership with local businesses to promote the fortified brands.

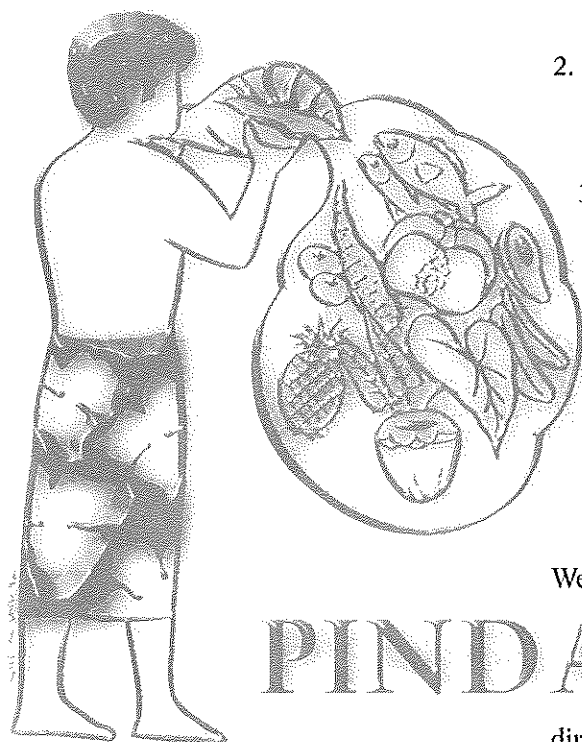
*Contributed by Wendy Snowdon
UNICEF Health & Nutrition Adviser
Chuuk, FSM*



Winner of the raffle
received tee-shirt displaying
Vitamin-A information.



Vitamin-A fortified instant noodle



and other food-related friends to join PINDA.

2. We need to finalize our Constitution, so please submit your comments to PINDA Secretary C/- NITO, Secretariat of the Pacific Community, BP D5 98848 Noumea, New Caledonia.
3. PINDA is an infant professional organization that needs a lot of support in terms of funding, technical know how etc. – so if any of you know other funding agencies that can assist PINDA, please let us know.
4. The joint Australian Diabetes Association (ADA), New Zealand Diabetes Association (NZDA) and PINDA Conference is proposed in the next 3–4 years – detailed information will be announced later. The venue for this conference has not been confirmed, but Fiji has been mentioned. Keep in mind that the next joint conference is not too far away. Start raising some funds in your community now to support your members to attend in year 2003.

We all need to organize ourselves locally and submit comments, suggestions and ideas for the next Regional Meeting.

PINDA

Once again, let us try our best to contribute as much as possible locally, nationally and internationally, to get PINDA going in a positive direction. The life of the association depends on every individual member – not on the Executive alone.

October 28 1999

Dear Friends and Colleagues,

I would like to take this opportunity to thank each one of you for electing me to be your PINDA President. I took sometime to think about this prestigious position and wonder how we can best work together to make our association serve us better.

The outgoing Executive tried their best to get PINDA going. We thank them for trying and giving their best. We know that having and getting an association like ours going is not easy, by virtue of the fact that we, the members, are scattered over Polynesia, Melanesia and Micronesia. The task ahead of us will not be any easier.

There are a lot of challenges ahead and I personally request all your kindly support to give PINDA a new lease of life. At this point, I would like to highlight a number of challenges that I believe we all need to prioritize from this year on:

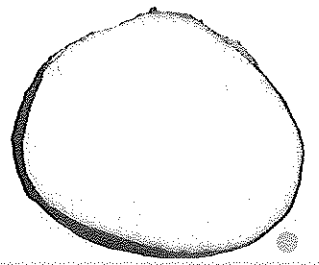
1. We definitely need to encourage all of our nutritionists, dietitians

On behalf of the PINDA Officers, I would like to express our deep appreciation for all your support and confidence in us. Remember we the officers can not make positive differences without your support. Let us hold hands and work together into the new millennium.

Thank you.

*Jane S. Elymore,
Federated States of Micronesia,
President,
Pacific Island Nutritionist
and
Dietetics Association
(PINDA)*





YAMS. A GUIDE TO 12 VARIETIES

month, **Tour de côte** focuses on a variety of yam selected those best known for their taste and culinary qualities. **Tour de côte** is a monthly magazine produced in Noumea by **Presse Communication**. The magazine covers a wide range of subjects from culture, health, tourism, agriculture and

Boitanin a Yam to Watch in Ponerihouen

Boitanin: a yam with potential

A few years ago, at his farm in the Ponerihouen Valley, Miguel Dubois began growing food crops for market. This year (1998), he has planted 10,000 yams on a 0.6h plot irrigated by water pumped from the neighbouring river, from which he estimates he will bring in a harvest of 50 tons. Six varieties are represented and have been planted in order according to the time it takes for them to reach maturity. This technique facilitates harvesting and avoids damaging the rest of the crop that is still in the growth phase.

Included in the yams planted are 800 of the *Boitanin* variety, most of which will be used for seed production. In the years to come, the Ponerihouen farmer thinks this yam variety, which he wants to produce in large quantities, will have a very promising future. "It's a very popular variety with yam eaters", he explained.

"There is really no marketing problem with *Boitanin*. By word of mouth, people have come to know that I'm growing them and they come and see me to buy from me directly. And as it's a fairly early maturing variety, it's also handy for my business' cash-flow".

With its medium sensitivity to diseases, the *Boitanin* thrives on the alluvial soils of the Ponerihouen valley where it yields 3 to 4 kg per plant in two or three tubers. To guarantee a fine crop, Miguel Dubois chooses his seed material from the healthiest plants and divides them up into 300g portions. This technique has been tried and tested and gives him a good chance of achieving a harvest of 2.5 to 3t of *Boitanin* this year.

Boitanin

A local variety, *Boitanin* is particularly familiar to east coast residents, in an area between Canala and Poindimié. It has pride of place in the traditional gardens of the Tchamba and Ponerihouen valleys where it is considered one of the finest yams, graded in custom immediately after the "chiefly" yams.

In some areas, *Boitanin* is the first yam variety to be harvested in the season. This is the new yam, shared by families. In others, it has a special place in ceremonial exchanges occur-

ring at the times of birth, marriages and deaths.

Taste-wise, the *Boitanin* is reliable. Classified as an excellent yam, it is very popular for its smooth texture, fine taste and firmness after cooking.

In popular terms, this is a 'strong' yam, with various characteristics. The plant is a vigorous vine, with thick foliage; it has medium sensitivity to diseases and yields imposing tubers under favourable growing conditions.

This variety is a fairly early-maturing yam with a growth cycle of 8 to 8 1/2 months; it produces tubers that store well and appeal to yam lovers. *Boitanin* has a lot going for it. For these reasons, the commercial producers of the northern part of New Caledonia have begun to include it in the range of quality yams they offer for sale.

How to recognise *Boitanin*

The *Boitanin* variety takes the form of a very elongated tuber, 70 to 80 cm in length, with some specimens up to one metre long. Generally straight and slightly hairy, it has a fairly regular shape, often with small cracks towards the top.

This is one of the few yams with very white flesh. When scratched with a

YAMS a guide to 12 varieties

finger nail, a very white layer is also to be found right under the skin. When sliced, it shows a fine attractive grain.

In the field, it can be recognised by its wide leaves, which are a very shiny and attractive light green. The generally very leafy vine sometimes also looks a little wilted.

Cultivated almost entirely in the centre of the Territory, *Boitanin* is known by this name in the three main production areas.

How to cook it

With its regular shape and thin skin, the *Boitanin* is an easy yam to peel. The firmness of its flesh after cooking and its smooth texture mean it can be used to make bougna. It requires, however, less cooking time than the often firmer bougna yams.

After peeling, it needs to be cooked for 30 to 35 minutes in water to maintain enough firmness not to crumble when sliced.

As it absorbs sauces well, it can be served in slices or is suitable for.

Boitanin: a 'strong' yam needing attention

A long yam, which can grow up to one metre in length, *Boitanin* requires deep preparation of the soil. With medium sensitivity to diseases, it does need careful attention throughout its growth and up to one month before harvesting. In good, fertile soil, about 30t per hectare can be produced.

With an 8 to 8 1/2 month cycle, *Boitanin* is a fairly-precocious variety. When planted between mid-

August and mid-September, it can be harvested from mid-April to the end of May. In the production calendar, it will emerge between a precocious yam such as *Kököci* and a seasonal yam such as the *Nouméa* variety (harvested from mid-June onwards).

This variety shows medium sensitivity to anthracnose (leaf-burn disease) but is demanding as regards planting and maintenance care. Many growers have lost this variety due to negligence, leading to a succession of harvesting and planting of seeds from unhealthy plants.

Deep soil preparation is needed to favour the optimum development of this long yam (up to 1m). The cutting must weigh at least 300g and should be trained onto a tall stake. If these requirements are respected, on fertile land, yields of 25 to 30t per hectare can be obtained. Each plant can produce up to 7 tubers (3 large and 4 small for example).

If shorter stakes are used, you can use slightly smaller cuttings (250g), but irrigation will be needed during the dry season. In this case, you can reasonably expect a standard yam yield of 3 to 4 roots per plant including one large one 60/70cm in length and some smaller ones 40/50cm in length.

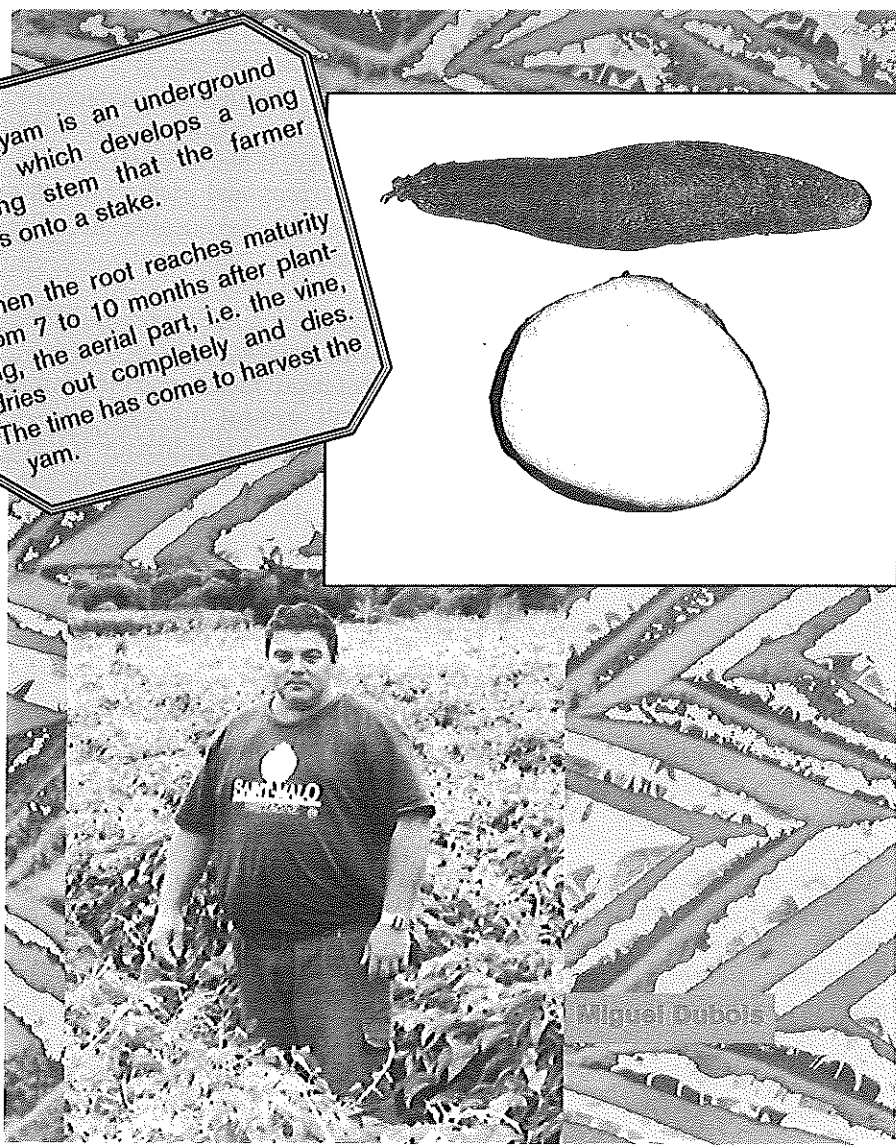
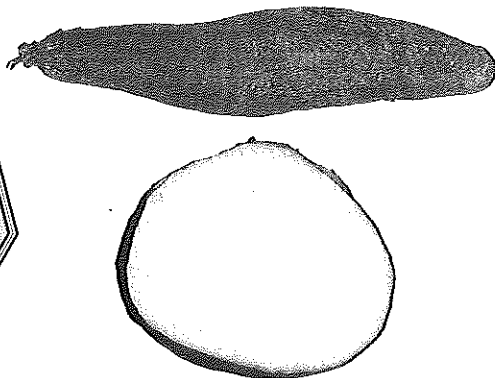
The large leaves of *Boitanin* offer a large surface area for evaporation. This variety should therefore be planted in areas not exposed to wind, with cool daily temperatures. Because of the length of the roots, drainage is required in wet, low-lying areas. This will prevent the ends of the tubers suffering from rot. Lastly, again because of its size, *Boitanin* does not lend itself to mechanical harvesting.

Source:

Translated from an article in *Tour de Côte* n°82, April 1998 by SPC Translation Services

The yam is an underground tuber, which develops a long twining stem that the farmer trains onto a stake.

When the root reaches maturity from 7 to 10 months after planting, the aerial part, i.e. the vine, dries out completely and dies. The time has come to harvest the yam.



Miguel Dubois

CHANGES IN FOOD CONSUMPTION PATTERNS and Implications for the Health of Pacific Islanders in New Zealand

Studies of food eating patterns have clearly shown that two of the major limiting factors that affect people's food choice are 'availability' and 'cost'.

The changes seen in the food choices of Pacific Islanders living in New Zealand appear to confirm the above. These changes are more evident on a daily basis. The changes have had both good and bad effects on health.

Changes documented are:

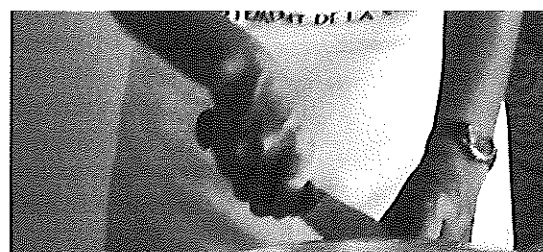
- ▶ Traditional starchy foods which contain a lot of fibre and keep the stomach 'full' for longer periods have been replaced by potatoes, bread from refined flour, and white rice.
- ▶ Body-building foods such as beef, chops, sausages, chicken, dairy products are eaten more often instead of fish;
- ▶ More than two types of meat can be served in one meal;
- ▶ Traditional leafy greens such as taro leaves have been replaced by silverbeet;
- ▶ Temperate-climate fruits like pears, and apples have replaced tropical fruits;
- ▶ Coconut has largely been replaced by butter, oils and margarine as a source of fat;
- ▶ More tea and coffee are being drunk;
- ▶ New foods such as meat pies, baked beans, and yoghurt have been adopted;
- ▶ The consumption of protein in Pacific Islanders in NZ is much higher than that of their counterparts in the Islands;
- ▶ The total energy consumed by Pacific Islanders in NZ is much

higher than that of their counterparts in the Islands;

- ▶ The total cholesterol consumed by Pacific Islanders in NZ is much higher than that of their counterparts in the Islands;
- ▶ Pacific Islanders of higher income appear to consume healthier meals;
- ▶ Traditional foods are reserved for feasts;
- ▶ Traditional Pacific food items are relatively cheaper in Auckland than in other parts of New Zealand.

Implications for Health:

- ▶ The diet of Pacific Islanders in New Zealand is high in energy, total fat, animal protein, sugar, and low in complex carbohydrate and fibre. This is likely to cause obesity and other diet-related chronic degenerative diseases;
- ▶ The lifestyle of Pacific Islanders indicates a much lower physical activity level than that of other ethnic groups. When this is combined with high energy, and high fat intake, it becomes the most potent ingredient for overweight, obesity, hypertension and CVD;
- ▶ Iron deficiency in Pacific Island children aged 6-36 months is high;
- ▶ It is estimated that 75% of Pacific Islanders in NZ are overweight;
- ▶ More Pacific Islanders have high blood pressure compared to (Europeans);
- ▶ The risk of diabetes and the occurrence of impaired diabetes tolerance in Pacific Island people are higher than in Pakeha



after controlling for BMI, age, and income;

- ▶ The age-adjusted prevalence of diagnosed diabetes in Pacific Islanders is higher than in Pakeha.

*Adapted from a paper presented by
Tai Matenga-Smith,
Pacific Island Nutrition Educator,
South Auckland Office. 2nd Floor
Leyton House,
Manukau City centre,
Auckland, NZ.
For the SPC Regional Nutritionists
Workshop, Auckland, NZ,
September 1999.*



UNICEF'S POSITION ON THE DURATION OF EXCLUSIVE BREASTFEEDING

UNICEF wishes to clarify its recommended timing of complementary feeding, and thereby the length of exclusive breastfeeding. In its communication UNICEF makes the point that in this context, it is important to make a distinction between public health policy recommendations, and individualised case management.

UNICEF, together with the World Health Assembly (WHA) and many governments, maintains that the infant feeding recommendations in general are for breastfeeding to be exclusive for about 6 months. In public health policies and communication,

what will produce the highest attainable standard of health for the majority of infants are what determine the recommendations. For example, we urge

"Breast is best" without adding that in a few cases such as maple syrup urine disease or PKU, other feeds could be medically necessary.

Adaptation to the needs of the individual who represents a less usual case is always to be done one by one, through individualized case management. This is clearly stated in WHO/UNICEF Integrated Management of Childhood Illness (IMCI) materials, where it is explicitly stated that "Most babies do not need complementary foods before 6 months of age."

In the case of poor growth or other signs that breastfeeding is not going well in the early months, one would first correct the breastfeeding pattern, getting rid of other feeds such as water, making breastfeeding exclusive and frequent again, observing the effectiveness of suckling and who terminates the feed (baby or mother), eliminating any use of bottles or pacifiers, and generally making breastfeeding management as good as possible. Only after a week or two of well-supported, exclusive breastfeeding, in the optimal pattern, would one want to consider there might be a need to start giving some complementary food to the child over four months of age but not yet six months.

There are three signals of a possible need for early complementation in such an infant who is effectively and exclusively breastfed and is over four months but not yet six months. These are specified in the IMCI materials as follows, with bracketed explanations added by ourselves: "The mother should only begin to offer complementary foods if the child:

- shows interest in semi-solid foods [e.g. reaching for them and shouting]

- appears hungry after breastfeeding [on demand, without any limits] or

- is not gaining weight adequately...

The mother should give the complementary foods 1–2 times daily after breastfeeding to avoid replacing breast-milk." (IMCI Counsel the Mother, WHO/UNICEF 1995, p.5)

UNICEF recommendations in this, as in other aspects of infant feeding, are guided, so far as possible, by current scientific and clinical evidence. A recent key article is by Cesar Victora et al., *Impact of breastfeeding on admission for pneumonia during postnatal period in Brazil: nested case-control study*. *Brit Med J* 1999;318:1316–1320.

In addition, WHO's publication *Complementary Feeding of Young Children in Developing Countries* (WHO/NUT/98. 1) reviews current scientific knowledge. The authors of this review conclude that "full-term infants with appropriate weight for gestational age should be exclusively breastfed until about six months of age." (p.167) The more recent work of Dewey, Cohen et al. in Honduras further indicates that no growth advantage is seen even in Low Birth Weight infants when complementary foods are introduced before six months (*Am J Clin Nutr* 1999; 69(4)).

There are a few colleagues who omit these key references from their discussions of the timing of complementary feeding, and insist on recommending complementary foods from 4 months or using the outdated ter-

minology of "4-6 months." This phrase, used in the *Innocenti Declaration* of 1990, predates the evolution of knowledge about the damaging effects of early complementation upon both breastmilk intake and infant morbidity. Current knowledge is adequately represented in the up-to-date "about six months".

We could not identify any current studies that would justify the general recommendation of complementary foods from 4 or 5 months; all newer studies suggest that such a recommendation would have a deleterious effect on child health without any compensating advantage in growth.

It is of course important to recall that according to international definitions, an infant who receives expressed breastmilk in the mother's absence is exclusively breastfed. (WHO/CDD/SEP/91.14) UNICEF and WHO are in agreement that such milk should be given by open cup, not by feeding bottle, and this helps to ensure that the infant will suckle effectively at the breast when her or his mother returns.

We would point out that since 1993, key UNICEF publications have recommended exclusive breastfeeding as follows:

"Breastmilk alone is the best possible food and drink for a baby. No other food or drink is needed for about the first six months of life..... A variety of additional foods is necessary when a child is about six months old, but breastfeeding should continue well into the second year of a child's life and for longer if possible." (Facts for Life, UNICEF 1993).

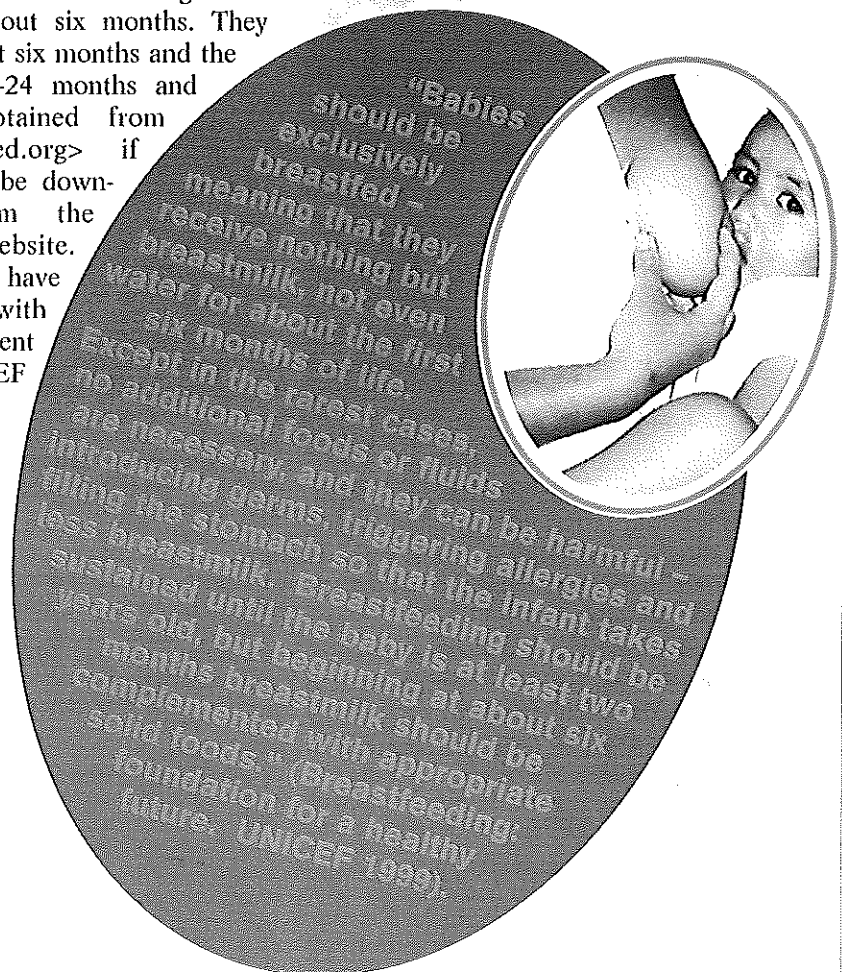
The latest UNICEF publication on infant feeding repeats this recommendation:

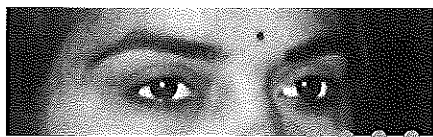
"Babies should be exclusively breastfed - meaning that they receive nothing but breastmilk, not even water, for about the first six months of life. Except in the rarest cases, no additional foods or fluids are necessary,

and they can be harmful - introducing germs, triggering allergies and filling the stomach so that the infant takes less breastmilk. Breastfeeding should be sustained until the baby is at least two years old, but beginning at about six months breastmilk should be complemented with appropriate solid foods." (Breastfeeding: foundation for a healthy future. UNICEF 1999).

Readers may request these publications from their UNICEF country offices or National Committee for UNICEF.

We would also mention that two *Facts for Feeding* leaflets from the Linkages project contain helpful current information, including the recommendation of breastfeeding exclusively for about six months. They cover the first six months and the period of 6-24 months and may be obtained from <linkages@aed.org> if they cannot be downloaded from the Linkages website. These leaflets have been sent with our endorsement to all UNICEF offices.





THE PREVALENCE OF MALNUTRITION AMONG URBAN & RURAL SCHOOL CHILDREN IN FIJI: A CROSS-SECTIONAL STUDY

Introduction

No published studies have looked at malnutrition among schoolchildren (aged 6–12) in Fiji. Unpublished data suggests that under-nutrition is prevalent in rural areas, while overweight status is a significant problem in urban areas.



Nirmala Nandi
at a recent nutritionists meeting

The purpose of this study is to determine the prevalence of malnutrition among schoolchildren aged 6–12 in Suva and Rewa subdivisions, in the Fiji Islands. Additionally, it was hoped to find out if there is an association between race / ethnicity and malnutrition, and the influence of living in urban or rural areas on nutrition status.

Methods

A total of 33,074 children aged 6–12yrs from 58 urban and 46 rural primary schools in Suva and Rewa subdivisions were weighed and measured by school health teams comprising nurses, dietitians and student nurses.

Schools were classified as urban or

rural according to town boundaries. Semi-urban schools were classified as urban. Schools were further categorised into "Fijian schools" if >90% of enrolment were Fijian children; "Indian schools" if 90% were Indian children; and all other schools "Mixed schools".

To determine nutritional status, the Fiji Ministry of Health's Reference Weight for Height (adapted from WHO, NCHS and Gomez classification) was used. The same reference standards were used for Indian and Fijian children and for other races (6).

The cut off points were as follows:

Obese > 120%
Overweight 110–120%
Normal 90–109%
Moderately
Underweight 80–89%
Severely Underweight < 80%

For analysis purposes, the categories "obese" and "overweight" were combined as "overweight"; "moderately

underweight" and "severely underweight" were combined as "underweight".

All data were entered and analysed using *Epi Info 6* software (7).

Results

Tables 1 and 2 show the results.

Urban vs. rural schools

The results showed that overall, 24.2% students were overweight. Significantly more urban than rural students were overweight: 28.3% and 8.7% respectively.

For all students weighed, 22.2% were underweight. Urban students were significantly less likely to be underweight: 19.4%, compared with rural students 32.9%.

Students in "Fijian schools" were much more likely to be overweight in urban areas than in rural areas (39.5% and 5.1% respectively). Students in urban "Fijian schools" were also much less likely to be underweight than students in rural

Table 1: Nutritional Status in Urban Schools in Fiji
(Suva and Rewa Subdivisions)

School category*	Underweight	Normal weight	Overweight
"Fijian schools" n = 4390	5.8% (254)	54.7% (2400)	39.5% (1736)
"Indian schools" n = 2414	33.4% (806)	54.4% (1314)	12.2% (294)
"mixed schools" n = 19,373	20.8% (4028)	51.5% (9976)	27.7% (5369)
All urban schools N = 26,177	19.4% (5088)	52.3% (13,690)	28.3% (7399)

"Fijian schools", 5.8% and 29.4% respectively.

Students in "Indian schools" were more likely to be overweight in urban areas (12.2%) than those in rural areas (3.5%). Students in urban "Indian schools" were also less likely to be underweight than students in rural "Indian schools", 33.4% and 60.7% respectively.

Race / Ethnicity

In urban areas, students in "Fijian schools" were more likely to be overweight (39.5%) than students in mixed (27.7%) or "Indian schools" (12.2%). Urban students in "Indian schools" were more likely to be underweight (33.4%) than students in "Fijian schools" (5.8%) or "mixed schools" (20.8%).

In rural schools, 60.7% of students in "Indian schools" were underweight, which was significantly greater than for students in other rural schools (29.4% for "Fijian schools" and 34.0% for "mixed schools"). Students in "mixed schools" were significantly more likely to be overweight. (15.5%), as compared with "Fijian" (5.1%) and "Indian" (3.5%) schools.

Discussion

On the basis of this study, malnutrition (both overweight and underweight) appears to be highly prevalent among both urban and rural schoolchildren in Fiji, with only 52.3% of urban students and 58.4% of rural students being of normal weight.

Underweight is much more prevalent in rural areas and overweight much more prevalent in urban areas.

Several factors may contribute to the differences in malnutrition in rural, urban, Fijian schools, and Indian schools. Rural children generally eat more homegrown food and follow a more traditional diet (whether Indian or Fijian), and have less access to supermarkets and high-calorie, processed "junk food". Rural fami-

School category*	Underweight	Normal weight	Overweight
"Fijian schools" n = 4012	29.4% (1180)	65.5% (2630)	5.1% (202)
"Indian schools" n = 400	60.7% (243)	35.8% (143)	3.5% (14)
"mixed schools" n = 2485	34.0% (844)	50.5% (1255)	15.5% (386)
All rural schools N = 6897	32.9% (2267)	58.4% (4028)	8.7% (602)

*"Fijian school" = more than 90% Fijian enrolment

"Indian school" = more than 90% Indian enrolment

"mixed school" = all other schools

lies may have less access to cash to purchase food. In rural areas, children are generally more active and have less access to television, public transportation and private cars.

The high prevalence of under-nutrition in rural Indian children may be related to dietary and cultural practices (such as vegetarianism and fasting for religious purposes), and to socio-economic factors.

Urbanisation appeared to lessen the prevalence of underweight status among Indian children. Among Fijian children, overweight status was relatively uncommon in rural areas and appeared to be principally related to urbanisation.

It is interesting that in "mixed schools" in rural areas, overweight is more prevalent than in "Fijian" or "Indian" schools.

Malnutrition in schoolchildren has an important influence both on learning and on adult health and well-being. Malnutrition is sufficiently prevalent in Fiji that a combined effort to address these problems is urgently needed from the Ministries of Education, Health, and Agriculture as well as parent and

teacher groups and church groups. This should include culturally appropriate nutrition education in all schools and research into the specific causes of malnutrition. A nationwide nutrition education campaign could be organised using mass media e.g. newspaper, TV and radio to create general awareness to improve the overall nutrition status of children in Fiji's schools. This study demonstrates that as a top priority, schools with a high prevalence of under-nutrition should be targeted both to identify the factors leading to under-nutrition and to provide culturally-sensitive interventions which could serve as a model for all schools. Another high priority is to target schools with a high prevalence of over-nutrition for similar study and interventions.

As a developing country, Fiji has limited resources and has to cope with a double burden of the traditional health problems of developing countries plus the emergence of chronic diseases related to lifestyle.

This study demonstrates a need to focus resources on improving nutritional status. Empowerment of schoolchildren and their families to make healthy nutritional and lifestyle

choices has the potential to not only improve child health and survival, but to reduce the burden of chronic diseases in the years to come.

References

1. WHO. The health aspects of food and nutrition: WHO manual for developing countries in the Western Pacific Region of the World Health Organization (3rd edition). WHO: Regional Office for the Western Pacific of the World Health Organization - Manila, 1979.
2. Savou S et al. 1993 National Nutritional Survey: Executive Summary Report. National Food and Nutrition Committee; Suva, Fiji: 1995.
3. Smith TM et al. Food in Schools: The South Pacific Community Nutrition Training Project. University of the South Pacific; Suva, Fiji: 1990.
4. Vatucawaqa P. 1993 National Nutrition Survey: Subdivisional findings: Suva. National Food and Nutrition Committee; Suva, Fiji: 1995.
5. Vatucawaqa P. 1993 National Nutrition Survey: Subdivisional findings: Rewa. National Food and Nutrition Committee; Suva, Fiji: 1995.
6. Anthropometry Handbook for Assessing Nutritional Status: A Reference Standard for Health Care Workers in Fiji. Ministry of Health: 1995.
7. Centers for Disease Control and Prevention. Epi-info version 6 software. USD Inc.: Stone Mountain, Georgia (USA).

Adapted from a paper prepared by Nand N., Divisional Public Health Dietitian, Ministry of Health, Fiji, and Oman K.M., School of Public Health and Primary Care, Fiji School of Medicine.

THE PROCESS TOWARDS IRON FORTIFICATION: THE FIJI ISLANDS EXPERIENCE



The Anaemia Survey team: (left to right)
S. Narawa, P. Vatucawaqa, D. Schulz, S. Devi, G. Waqa

The Problem

Anaemia in Fiji has become a widespread public health problem. It has worsened during the last two decades despite supplementation, dietary improvement, and other public health programmes.

Anaemia is sometimes called 'weak blood' or 'thin blood' or 'pale blood'. It means that the blood does not contain enough *haemoglobin*, the thing that makes blood red. Iron is needed to make haemoglobin.

The most common cause of anaemia is *iron deficiency* or lack of the nutrient *iron* hence the term *nutritional anaemia*. Infection such as malaria and hookworm can also cause anaemia.

Fortification of food has been identified as a means of reducing anaemia in Fiji.

Effect of anaemia on health

For instance, anaemia increases the risk of mothers dying during delivery; increases the risk of sickness and death for babies (babies of anaemic mothers are more likely to be below birth weight of 2500g, and to become sick or die during early childhood):

Anaemia reduces adults' ability to work because they feel tired all the time, and lose interest in trying to do things better.

Anaemic children have more difficulty in learning and understanding, and have less energy for playing. They may learn and develop more slowly than healthy children.

Anaemic adults and children tend to be ill more often and take longer to recover.

The Processes towards Fortification

Fiji has been discussing iron fortification as another way of combatting anaemia. It has completed two of the processes needed:

1. Identifying possible food items to be considered. In this instance, three basic items, namely rice, milk, and flour were considered;
2. Selecting the most suitable food item to be fortified.

The next stages of the process still to be completed are:

3. Collaborating with Industry for support and for the development of fortification technology;
4. Mobilising political support for legislation, regulation and enforcement laws.

The ideal food is one that meets all the factors.

In Fiji's case, wheat flour met all the criteria and was considered the most appropriate food.

Advantages of wheat flour fortification

- Gives low-income consumer choice of an iron-rich food at very little cost
- Consumers need not change their diet
- Cost effective
- Does not require special effort to educate consumer
- Replaces the nutrients lost in the milling process
- Improves the nutritional value of introduced 'western' staples which have increasingly replaced the traditional staples.

References

Food fortification to end micronutrient malnutrition: state of the art. Micronutrient Initiative (MI), 1998.

Micronutrient fortification of foods: current practices, research and opportunities. MI/IAC 1996.

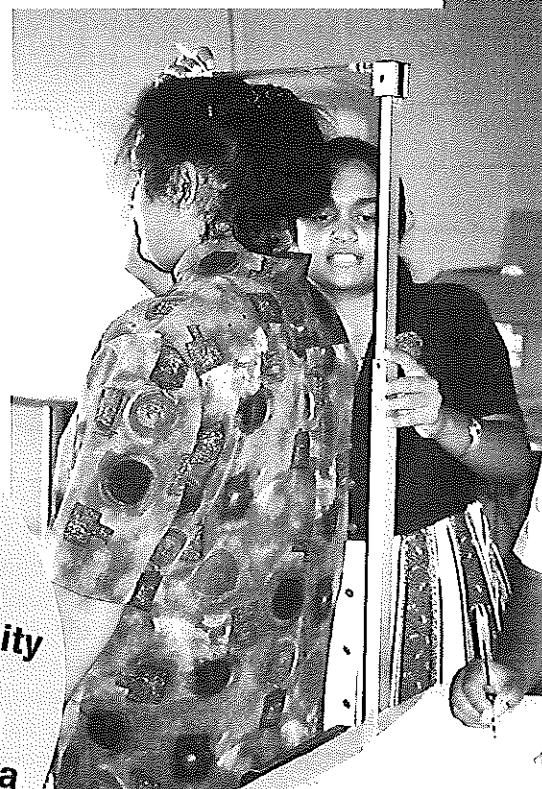
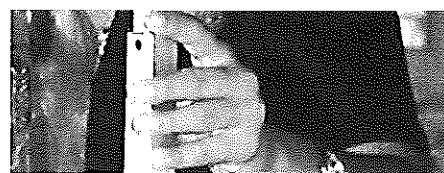
Schulz D, Vatucaawaqa P, Devi S, Report on Phase 1 of the Anaemia-

Productivity Research project, Fiji National Food and Nutrition Centre, 1999.

Schoffelen E, Ironfortification in Fiji Final Report, UNICEF, 1999.

Adapted from a paper prepared by Dirk Schulz, Senior Nutritionist, Fiji Food and Nutrition Centre, for the SPC Regional Nutritionists Workshop, Auckland, NZ. September 1999.

IRON FORTIFICATION
"No other technology offers as large an opportunity to improve lives and accelerate development at such a low cost and in such a short time"
World Bank, 1994



Sangita Devi, Nutritionist, Fiji Nutrition Centre, measuring the height of garment factory workers

Criteria for selecting the food item to be fortified

Food Demand

- Eaten by high percentage of population
- Little regional difference
- Little ethnic difference
- Little individual difference
- Unrelated to socio-economic status
- Eaten frequently
- Low risk for excess intake

Food Supply

- Centrally processed
- Few production places
- Good masking/blending qualities
- Low cost food item
- Readily available
- Stores well
- Easily available to the body

NCD PROJECTS AND PROGRAMMES CURRENTLY UNDERWAY IN SAMOA

An overview of some of the main non-communicable disease (NCD) programmes and projects currently being implemented by the Department of Health is discussed below. These programmes are run in conjunction with other Departments and NGOs in the country.

1. Promotion of a Healthy Diet

The Department of Health through its Nutrition Centre is the lead agency for promoting a healthy diet in Samoa working in partnership with other Government Departments and NGOs in the country. The main components of this programme include the following.

The mass media is one of the major ways of educating the public in Samoa.

The staff of the nutrition section develop, produce and distribute quarterly newsletters, pamphlets, posters, T-shirts, buttons and calendars about nutrition. The materials particularly target key decision makers in the community e.g. politicians, business leaders, newspaper reporters, education workers, agriculture workers and health workers.

A twenty-episode "nutritious" cooking programme, *Kuka FaaSamoa*, is being filmed with content input from the Nutrition centre. The project is sponsored by the Bahai community in Samoa with volunteer technical advisers from Australia, and a popular local comedian hosting the show. The main messages are to increase fruit and vegetable consumption while decreasing fat and sugar intake.

Televise Samoa, the national broadcasting network, airs a popular weekly health programme. The Nutrition Centre provided brief nutrition segments (approximately 5 minutes) at the end of each programme on breastfeeding, reading food labels, using dark-green, leafy vegetables, preparing healthy meals, and information on the fat content of local foods.

The Nutrition Centre, in conjunction with FAO, is developing twelve public service announcements for television which will reflect the Samoan Dietary Guidelines as well as basic food-safety issues.

As part of the healthy-diet promotion programme, special occasions e.g. World Food Day and World Health Day are celebrated. These occasions provide opportunities which have been taken advantage of in the past to run nutrition quizzes and competitions in vegetable gardens, and fruit arrangements, cooking, song and drama and sandwiches sponsored by the Nutrition Centre for children aged 8-12 years of age to promote a healthy diet.

In addition, World Food Day is always celebrated as Samoan Food Day. This is a special day when everybody is encouraged to eat traditional Samoan food.

2. Health Promoting Schools

The Department of Health and the Department of Education have recently established a Health Promoting Schools Council to co-ordinate health-promoting activities in the schools. This Council has a



wide representation of people from Government and NGO backgrounds.

The Council has developed indicators for the Health Promoting Schools Programme which cover a wide range of activities including eating healthy food. Indicators covering the teaching of nutrition to students and teachers are included.

Health Promoting Schools activities underway include teacher training courses, a smoke-free sports competition, and improving food in the school canteens. A Health Promoting Schools competition held in 1998 had healthy food as one of the judging criteria.

The schools oral health programme's main feature has been sealing the molars of children to protect them against decay. *Colgate* has sponsored a programme to get children to brush their teeth in school for the past year. The programme provides toothbrushes and toothpaste for children in primary schools. Children in secondary schools and colleges have oral examinations by dental staff. All schools in Samoa are taking part in this programme.

3. Home gardening

The programme is co-ordinated by a garden committee chaired by the Ministry of Women's Affairs with rep-

resentation from the Health and Agriculture Departments. The committee runs training workshops on garden and nutrition mainly for women.

The Nutrition Centre maintains a demonstration garden, which promotes fruit and vegetables, especially dark-green, leafy vegetables. Everybody is welcome to visit the garden to learn about the fruit and vegetables and to take cuttings if they wish. In 1998, 434 people toured the garden.

The garden produce is used for cooking demonstrations and cooking classes. These cooking classes have become very popular with people. In these classes a conscious effort is made to target participants who will pass the information on to others e.g. teachers, nurses, and agriculture students.

4. Exercise programmes

The Department of Health, in association with private businesses, held a Health and Nutrition walk last year. Participants walked a mile along the sea wall and then participated in an aerobics class, rounded off with a healthy breakfast provided by the Nutrition Section and local restaurants. The restaurants had to submit their menus to ensure that only healthy food was provided. Prizes for the oldest walker, best banner etc., were given. Thousands of people turned out.

The Health Education and Promotion Services (HEAPS) Section in the Department of Health has been holding twice-weekly exercise classes in the vegetable market for the past year. The target audience is the market stall operators and other interested persons.

5. Inservice nutrition education training

Health workers, especially community nurses, have been targeted for one- and two-day: "hands-on" nutrition education workshops by the Nutrition Centre. Topics covered include growth monitoring children

and adults, identification and preparation of local, dark-green, leafy vegetables, nutrition therapy for malnourished children and prevention of iron-deficiency anaemia.

The Nutrition Centre, in conjunction with the University of the South Pacific Samoa Extension Centre, conducted a Community Nutrition training course for hospital kitchen workers, USP kitchen staff and staff from two secondary boarding schools. It was the first nutrition education for many of these food handlers.

6. Upgrading Hospital Diet

The Hospital kitchen serves the types of food that should be consumed in order to meet the Samoa Healthy Diet Guidelines. The diets have recently been updated to ensure they are healthy, and the diabetic diet and low-salt diet for hypertensive patients will no longer need to be served as special diets.

7. Smoking

The Health Education and Promotion Services of the Department of Health have worked hard to reduce smoking rates in Samoa. Many workplaces are now smoke free. Anti-tobacco legislation has been drafted but has not yet been passed.

8. Promoting breastfeeding

Breastfeeding promotion is one of the major programmes run by the Nutrition Centre. The work is being done in collaboration with other sections of the Department of Health and with other Government Departments and NGOs. The aim of the programme is to raise breastfeeding rates in Samoa and to obtain a Baby-friendly Hospital Award for the two maternity hospitals in Samoa. The percentage of babies exclusively breastfed when discharged from the maternity ward has risen from 61% in 1992 to 96% in 1999. This is an indication of the success of the programme.

9. National Food and Nutrition Council and the National Food and Nutrition Policy

Cabinet approved the establishment of the National Food and Nutrition Council (NFNC) within the Department of Health in August 1987. It is a multi-sectoral group with representatives from Government, NGOs, and International Organisations, and chaired by the Director General of Health.

The NFNC has an advisory function and assists Government with all matters related to food and nutrition.

The National Food and Nutrition Policy, that was prepared by the Council, was approved by Cabinet in 1996. Since that time the Council has been working on a National Plan of Action for Nutrition which has not been completed.

Conclusion

The NCD situation in Samoa is serious and costly both in terms of health and the economy. Although programmes have been developed to address the problems it will be some time before their effects are apparent.

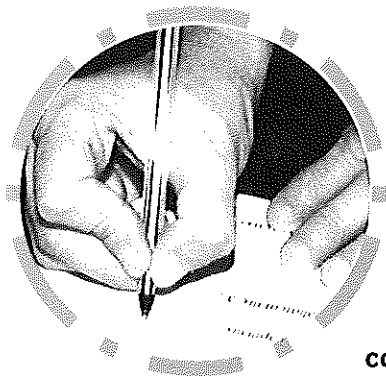


Christine Quested,
Director,
Nutrition Centre,
Samoa

*Adapted from a
paper prepared by
Christine Quested &
Kerri Calvert-Faamoe,
Nutritionists, Samoa
For the SPC Regional
Nutritionists*

*Workshop, Auckland, New Zealand,
September 1999*

ARE YOU INTERESTED?



Paediatric Nutrition Courses

The Department of Nutrition and Food Services at the Royal Children's Hospital in Melbourne is once again running specialised paediatric nutrition courses in 2000. These specialised courses have run for three years and have proven to be extremely popular. Early application is recommended.

Nutrition and Child Health (Unit 1)

This unit will cover diverse topics such as assessment of growth, energy requirements, childhood obesity, failure to thrive, public health issues and many others.

Date: 3rd to 6th August 2000.

Clinical Nutrition and Dietetics (Unit 2)

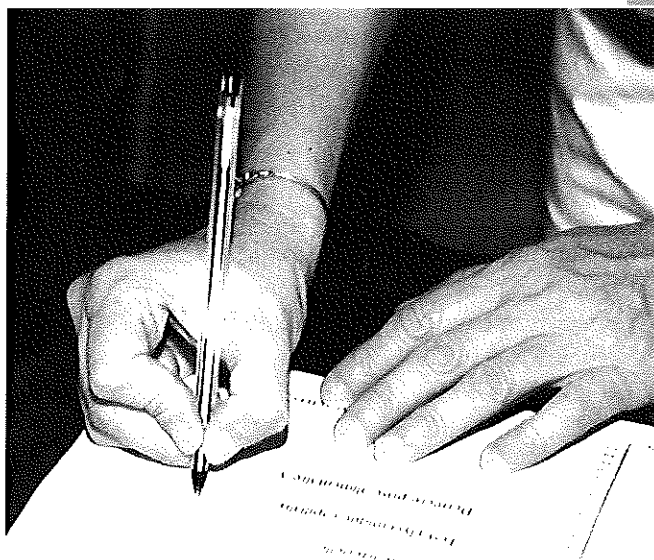
This unit has a clinical orientation and covers topics such as paediatric gastroenterological disorders, renal disease, cystic fibrosis, diabetes, enteral and parenteral nutrition.

Date: 30th November to 3rd December 2000.

The combination of Unit 1 and 2 together with additional exam and course work leads to the University of Melbourne Certificate in Paediatric Nutrition and Dietetics.

Unit 1 can be done in isolation and is recommended for those working in private practice or community settings as well as those in a clinical workplace.

For further information and an enrolment form please contact Evelyn Volders or Liz Rogers on +61 03 9345 5663 or email volderse@cryptic.rch.unimelb.edu.au.



© Copyright Secretariat of the Pacific Community 2000.

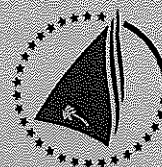
All rights for commercial / for profit reproduction or translation, in any form, reserved. The SPC authorises the partial reproduction or translation of this material for scientific, educational or research purposes, provided that SPC and the source document are properly acknowledged. Permission to reproduce the document and/or translate in whole, in any form, whether for commercial / for profit or non-profit purposes, must be requested in writing. Original SPC artwork may not be altered or separately published without permission.

Original text: English. Please note that articles from Micronesia and the US retain American spelling.

Design and layout: Muriel Borderie; Illustrations: Jipé Lebars; Editing: Sarah Langi; SPC Publications Section.

Produced by Jimaima Tunidau Schultz, Community Health Programme.

Funded by the New Zealand Government



SPC, B.P. DS, 98848 Noumea Cedex, New Caledonia, Telephone: +687 26.20.00, Facsimile: +687 26.38.18, E-mail: robert@spc.org.nc, Web site: <http://www.spc.org.nc>