Singapore Dietitians' Association

The Singapore Dietitian

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Dietary Fibre : Which Source?

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Singapore Dietitians' Association

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From the President. . . . . .

From inception, the Singapore Dietitians' Association sought to be better known and to upgrade the dietetic profession in Singapore. This objective has been achieved to some extent in the past year; hopefully, we will continue to grow and increase our achievements in the next year. To be able to do this, we have to keep abreast of latest developments and knowledge in our field. Therapuetic dietetics is complex and is constantly changing. Dietetics as a profession has made huge strides in the past few years. As dietitians we have to ask ourselves if we are keeping up with these changes.

As a member association of the Singapore Professional Centre, we strongly support its continuing education policy. I hope that the Singapore Dietitians' Association will strive to provide opportunities for the development of its members, as I see continuing education and extension of knowledge to be fundamental to the future of our profession. Positive attitudes and efforts of our members will also help to ensure the association's growth and achievement.

Mrs Helen David
President
Singapore Dietitians' Association

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2. Dietary Fibre — Which Source?

Food Versus Supplement

Chai Kwok Hoey, B.Sc.

In recent years there has been a considerable reduction in consumption of fibre in Singapore together with a changed pattern in fibre intake: a slight increase in fibre from fruits and vegetables, but a bigger decrease in fibre originating from cereals.

The current interest in dietary fibre and its properties has been the reason for the launch of a range of supplements on the market, most of them being promoted as a means of achieving weight loss. Often the question posed by the health-conscious, uninitiated consumer is – "Do I need to get my fibre from supplements? Can fibre supplements help me to lose weight?"

Overweight is a commonly occurring disorder in the industrialised countries. The frequency of overweight is growing rapidly and is probably caused by changes in eating habits, decreased physical activity and by economic and social factors. The possibility that dietary fibre could influence body weight was proposed by Cleave in 1957 (3).

An enhancement of dietary fibre intake may prevent development of overweight or be of value as part of a diet during weight reduction. This enhancement can be accomplished in two distinctly different ways : by changing eating pattern toward food rich in dietary fibre or by making use of commercially available fibre preparations.

Potential importance of dietary fibre in relation to obesity

1. Fibre with its low caloric availability and capacity to bind water, offers considerable opportunity for the caloric dilution of foods.
2. Fibre-rich diets stimulate chewing and increase the time required for the consumption of the meal. Food remains in the mouth longer allowing more time for the development of a feeling of satisfaction. Food intake may therefore be interrupted earlier.
3. The effect of fibre in slowing the rate of gastric emptying may reduce hunger and prolong the feeling of satiety.
4. Fibre causes slight malabsorption of fatty acids and bile acids.
5. Fibre can influence the release of certain gastrointestinal hormones which may lead to lower insulin levels and attenuated hunger.
6. Fibre can improve both glucose tolerance and insulin sensitivity which may influence hypothalmic centres involved in hunger regulation.
7. Fibre increases the passage rate and peristalsis in the terminal part of the large intestine and markedly increases faecal volume, thereby preventing constipation. The laxative properties of fibre are particularly important during weight reduction with a low caloric diet, which by itself reduces the faecal volume (1).

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Dietary fibre, food intake and satiety

The most important effect of fibre is to reduce the caloric density of the food, however all dietary fibres do not have the same efficacy. Recent studies suggest that gel forming fibres such as guar gum and pectin are more potent in promoting a weight reduction than the non-gel forming fibres like bran. This difference is probably due to some specific properties of gel forming fibres such as their ability to reduce the rate of gastric emptying and lower the insulin levels (1).

The potential effectiveness in obesity of caloric dilution of food *per se* is probably limited. Animal experiments have shown that the food ingestion is frequently increased so that body weight is unchanged or only slightly decreased (1). However, Aliand colleagues have also demonstrated that obese individuals did lose weight on a high fibre diet as they voluntarily decreased their food intake (2). This may have been due in part to the satiety exerted by food rich in fibre and thus better adherance to the prescribed diet.

Many of the fibre supplements marketed recommend the intake of two glasses of water along with the tablet half an hour before each meal which by itself could bring about a decrement in food intake at the meal time.

Dietary fibre and food digestion

Fibre supplementation has been reported to reduce the digestibility of protein and carbohydrate. However, with regards to obesity any possible malabsorption of nutrients is probably of such small magnitude that it cannot play a significant role (1).

Dietary fibre and metabolism in obesity

Obesity is characterised by a number of metabolic aberrations such as elevated triglycerides, hyperinsulinaemia and increased propensity to diabetes. Dietary fibre may directly alleviate these metabolic abnormalities through mechanisms other than those facilitated by a reduction in weight as these metabolic effects of dietary fibre studied in non-obese individuals can be extrapolated to the obese individual (1).

In line with current research findings about the many health benefits of a high fibre intake, low calorie-high fibre diets are prescribed for weight reduction. In these reducing diets decreased food quantities result in low intakes of minerals and vitamins. Incorporating natural high fibre foods which are excellent sources of minerals and vitamins are an added advantage. This may not be true, however, of fibre supplements being promoted for weight loss.

How much dietary fibre is there in fibre supplements?

Table 1 shows a list of fibre supplements surveyed. The average pre-meal dosage is about four tablets yielding a total of two grams of dietary fibre. The average daily intake which is normally three such doses (i.e. twelve pills) would come up to a total intake of six grams of dietary fibre per day.

In Table 2, a list of foods providing six grams of dietary fibre and their cost is given.

Table 1
Comparison of locally available fibre supplements

Product	mg fibre /tablet	Types of fibre	Premeal dosage	Cost/ 6g S$	Cost per day for 3 meals S$
A	400	Wheat, apple, pea, guar gum, microcrystalline cellulose	4-6	0.81	0.65 – 0.97
B	600	Grain, citrus	3-6	1.02	0.92 – 1.84
C	500	Gum arabic	2-4	0.43	0.22 – 0.43
D	625	Hemicell -ulose pectin, lignin, cellulose	2-4	0.77	0.48 – 0.96
E	400	Pea, apple guar, wheat, cellulose	–	0.63	–
F	500	Bran	3	0.88	0.22-0.66
G	500	Bran	4	0.77	0.26-0.77
Range:	400-625		2-6	0.43-1.02	0.22-1.84

Health Risks

Dietitians are concerned about the excessive use of dietary fibre supplements. The excessive intake of fibre by those who are in the habit of taking more than the recommended dosage, thinking that if a little is good for you a lot would be better, could in the long run present some problems. Dietary fibre affects the absorption of minerals and the main cause is the naturally high phytate content of high fibre diets which can affect the availability of calcium, iron, and zinc. Chelation and shortening of transit time may also hinder nutrient absorption.

Fibre supplements of viscous preparations when consumed in large amounts cause distension, gas and diarrhoea and may lead to upper gastrointestinal obstruction.

TABLE 2

Food providing six grams of dietary fibre	Cost (S$)
1½ small oranges	0.50
2 *pisang mas*	0.20
2 apples	0.65
1 rice bowl red bean soup	0.40
2½ slices wholemeal bread	0.25
120g lady's finger (¾ bowl)	0.77
180g *kangkong* (1 bowl)	0.65
115g guava	0.58
Average	0.57

Currently the average dietary fibre intake in Singapore is 13g (preliminary unpublished data of the Singapore Cancer Registry). Although there is no fixed recommendation for the daily intake of fibre, an *ad hoc* working party of NACNE, U.K. have recommended that the average fibre intake should be increased to 25g/person/day during the 1980s and to 30g by the mid 1990s' and that this increase should come mainly from an increased consumption of wholegrain cereals (4).

From Table 3, it is clear that incorporating dietary fibre is not difficult. Even an extra 17g can be gained from natural food on a low calorie diet.

Table 3
How to increase your fibre on a low calorie diet

Low fibre diet 1200 kcal	Fibre content* g	High fibre diet 1200 kcal	Fibre content* g
Breakfast			
1 slice white bread	0.8	1 slice wholewheat bread	2.4
1 hard boiled egg		1 hard boiled egg	
½ cup skim milk		½ cup skim milk	
½ cup strained unsweetened orange juice		½ orange	2.0
Lunch			
60g cooked rice		60g noodles	
100g Chinese cabbage	1.4	40g lady's finger	2.0
60g steamed fish		60g kangkong	2.0
1 tbs chilli sauce		3 fishballs (plain)	
1 slice papaya	2.5	2 tofu triangles	
1 tsp oil		1 tbsp chilli sauce	
		1 slice papaya	2.5
		1 tsp oil	
Snack			
2 plain crackers	0.8	1 bowl red bean soup	6.0
½ glass skim milk		with artificial sweetener	
Dinner			
60g cooked rice		60g unpolished rice	2.0
100g spinach	2.3	120g mixed vegetables (peas, carrots, snow peas)	6.0
60g chicken (no skin)		60g chicken (no skin)	
1 small apple	3.2	1 small apple	3.2
1 tsp oil		1 tsp oil	
Snack			
½ glass skim milk		½ glass skim milk	
Total	11.0		28.1

**Source: References 20 and 21.*

Costs

The average cost of 6g of fibre obtained from fibre supplements ranges from S$0.43 – 1.02 (Table 1) while

6g of fibre from natural food plus all its added nutrients costs just S$0.20 – 0.77. While to some the monetary difference of about S$0.24 may not be important, but a few of the intangible advantages of fibre from natural food may be worth some thought:

1. Natural foods provide a variety of fibres but supplements are often restricted to a combination of two or three.
2. Foods naturally high in fibre are nutrient dense, while the mineral and vitamin content in supplements is questionable.
3. Those who depend on fibre supplements are missing out on the aesthetic value such as the texture, colour and flavour of food.

There is no doubt that the benefit of a reasonable increase in dietary fibre outweighs the detrimental effects. In fact, many health groups are advocating a higher intake of dietary fibre. However, it is evident that there is no necessity to increase fibre intake through supplementation in order to attain good health. The emphasis should be on achieving balanced nutrition utilizing natural foods. A sound approach to increasing the dietary fibre intake is to take a less refined and more varied diet incorporating fruits, vegetables, legumes, and wholegrains. Such a change is safe, tasty and nutritious, therefore more desirable than swallowing pills or supplements.

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3. Dietary Fibre and its Components in Some Southeast Asian Foods

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Abstract

In view of the universal interest in the health effects of dietary fibre and its components, an investigation into the dietary fibre content and composition of 63 commonly consumed Southeast Asian foods was carried out. Many of the foods examined were found to be substantially high in fibre, particularly stinkbean, snow-pea, lady's finger, sapodilla, jackfruit, guava, nuts, seeds, fungi and seaweed. From the determination of the average composition of fibre in the foods of each food group, it was found that noncellulosic polysaccharides constitute the major part of the dietary fibre in all food groups. The highest contents of cellulose are in black fungi, while the highest lignin contents are in fruits.

In an attempt to evaluate the usefulness of existing data on crude fibre content of Asian foods, the relationship between crude fibre and dietary was explored in fruits and vegetables, using approximate values for crude fibre. While there appears to be a strong correlation between "crude" and dietary fibre in fruits, the correlation is much weaker for vegetables and it is therefore not recommended that crude fibre values be used indiscriminiately as a guide to dietary fibre values of foods in general.

Introduction

Data on the content of dietary fibre in foods are valuable to research scientists who are seeking to elucidate the relation between fibre and health. Health professionals and the public also need information on the dietary fibre content of foods since some countries now encourage increased intake of dietary fibre as one of their national dietary goals (1,2). Some authorities have even recommended the actual quantity of dietary fibre that should be taken daily (3).

Dietary fibre constitutes in physiological terms those components of plant tissues not digested in the human alimentary tract. In chemical terms this definition coincides with the sum of lignin and all the non glucan polysaccharides, that is, starch is not included.

The major polysaccharide components of dietary fibre are cellulose, hemicellulose, pectin, algal polysaccharides, gums and mucilages. Among the monomeric constituents in dietary fibre polysaccharides are pentoses (arabinose and xylose), hexoses (galactose, glucose and mannose), deoxyhexoses (fucose and rhamnose) and uronic acids (galacturonic acid and glucuronic acid). The non-cellulosic components of dietary fibre are usually classified under the heading non-cellulosic polysaccharides (NCP).

There are suggestions that it may not necessarily be total dietary fibre but the composition of dietary fibre which has an important relation to disease aetiology and prevention. Bingham, for example, has found that colon cancer risk decreases with increased pentose intake, but not with increased total dietary fibre intake (4). Lignin and pectin have been shown to lower serum cholesterol whereas the effect of cellulose on serum cholesterol is debateable (5). Hence it is important to have information not only on total fibre but on the relative proportions of the different dietary fibre constituents in various foods.

A recent critical review of the food fibre data available (6) highlighted the fact that the analyses which have been carried out so far are insufficient. Furthermore, the values we do have at present must be interpreted with caution as the methodology for dietary fibre analysis is fraught with problems, and many values reported are estimated from only one sample. Presently the only fibre values given in the food tables for the Southeast Asian region (7,8), are for "crude fibre". This is a gross underestimate of the true dietary fibre value since the procedure for its determination destroys 80% of the hemicelluloses, 60-90% of the lignin and 10-50% of the cellulose (9).

Dietary fibre was estimated in some Chinese vegetables in Australia (10), but many more analyses of Southeast Asian foods are required. With regard to dietary fibre composition, Lund and Smoot (11) presented analyses of dietary fibre components in some tropical fruits and vegetables, but again, more analyses are required.

To these ends a programme of dietary fibre analysis in Southeast Asian foods was undertaken. Sixty-three commonly consumed foods available in Singapore were examined, comprising vegetables, fruits, nuts, seeds, fungi and seaweed. This paper presents the total dietary fibre content and composition in each food group. In an attempt to evaluate the usefulness of existing data on crude fibre in Southeast Asian foods, it also explores the relationship between crude fibre and dietary fibre.

Materials and Methods

All foods were purchased locally in supermarkets and so-called "wet" markets (traditional morning markets

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selling fresh foods). Three samples of each were processed, each sample being purchased at different outlets and at different times over a period of two to three months, to allow for analytical results which would encompass the maximum physiological and processing variation. The portions not normally consumed were trimmed off.

The remainder were oven-dried to constant weight and the dried, weighed samples were then taken through the Southgate procedure for fibre analysis (12). This method first removes starch by enzymatic hydrolysis using amyloglucosidase, then a series of extraction steps yields figures for cellulose, non-cellulosic polysaccharides and lignin. In its earlier version a hot-water extraction gave an estimate of pectins and gums but according to the originator of the method (13) the step is difficult to conduct in a reproducible manner. The present method is the most widely used for fibre analysis, but it has been criticised on the grounds that starch removal may be incomplete resulting in over-estimation of dietary fibre (14). This, however, affects only high starch foods such as potatoes, cereals and legumes, none of which were included in the present study.

The proportions of dietary fibre components in each food were determined as percentages and the average dietary fibre composition for each food group calculated.

The relation between crude fibre and dietary fibre was examined in fruits and vegetables by calculating the correlation coefficient of cellulose plus lignin, which was taken as an approximate measure of crude fibre, and total dietary fibre.

Results and Discussion

Table 1 presents the dietary fibre content and composition of the foods examined. Full details on nomenclature, edible portion, moisture and starch content and standard deviation will be reported elsewhere. As most of the foods are imported from around the region, these results may be taken as representative of the foods found in this part of the world.

Many of the foods were found to be substantially high in dietary fibre, the most notable being stink-bean, snow-pea, lady's finger, sapodilla, jackfruit, guava, nuts, seeds, fungi and seaweeds.

TABLE 1

Dietary fibre content and composition of selected Southeast Asian foods, g/100g edible portion.

Food	NCP[1]	Cellulose	Lignin	Total Dietary Fibre
Vegetables				
Chinese flowering cabbage	1.23	0.597	0.957	2.78
Chinese spinach, pointed leaf	1.47	0.637	0.130	2.24
Chinese spinach, rounded leaf	1.17	0.510	0.600	2.28
Locally grown cucumber	0.720	0.443	0.0800	1.24
Water convolvulus	1.77	0.977	0.387	3.13
Chinese cabbage, big	0.937	0.417	0.0800	1.43
Chinese cabbage, small	1.21	0.540	0.290	2.0
Collard	1.95	0.943	0.203	3.10
Local French bean	2.08	0.873	0.280	3.23
Hairy gourd/cucumber	1.27	0.613	0.0400	1.92
Bitter gourd	1.62	0.930	0.200	2.75
Local Chinese lettuce	2.07	0.870	0.433	3.37
Sweet potato leaves	1.60	0.810	0.363	2.77
Lady's finger	3.45	0.980	0.517	4.95
Yambean tuber	1.66	0.557	0.433	2.26
Waterchestnut	2.86	0.700	0	3.56
Purple eggplant	1.51	0.867	0.173	2.55
Garland chrysanthemum leaves	1.30	0.637	0.397	2.33
Snow pea, edible-podded	3.27	1.08	0.237	4.59
Lotus tuber	0.637	0.397	1.01	2.04
Stinkbean	4.47	0.767	0.313	5.55
Oriental radish	1.05	0.557	0.0367	1.64
Old/brown cucumber	0.533	0.403	0.0333	0.97
Wax gourd	1.06	0.610	0.0607	1.73
Fruits				
Sapodilla	2.89	1.19	4.55	8.63
Pineapple	0.947	0.540	0.200	1.69
Soursop	1.49	0.560	1.31	3.36
Jackfruit (Chempedak)	3.04	1.81	0.617	5.47
Jackfruit (nangka)	1.60	0.840	0.343	2.78
Starfruit	1.14	0.500	0.240	1.88
Papaya	1.61	0.810	0.0767	2.50
Watermelon	0.257	0.0933	0.0367	0.39
Pomelo	0.630	0.177	0.0700	0.88
Orange, Thai, thick-skinned	2.00	0.543	0.153	2.70
Orange, Thai, thick-skinned	1.28	0.353	0.0267	1.66
Fruits				
Durian	2.04	1.42	0.950	4.41
Waterapple	0.780	0.523	0.407	1.71
Longan	0.767	0.277	0.0133	1.06
Mangosteen	0.763	0.310	0.370	1.44
Lychee	0.820	0.157	0.660	1.64
Mango, large, Filipino	1.19	0.490	0.363	2.04
Mango, small	0.967	0.367	0.283	1.62
Banana (pisang tali)	1.60	0.373	2.60	4.57
Banana (pisang rajah)	1.82	0.410	2.03	4.26
Banana (pisang mas)	1.17	0.360	1.96	3.49
Rambutan	0.837	0.360	0.267	1.46
Guava	2.53	1.40	1.25	5.18
Pear, Korean, large, brown-skinned	0.853	0.457	0.233	1.54
Nuts and seeds				
Candlenut, dried	5.05	2.22	1.30	8.57
Cashew nut, dried	5.02	0.870	2.02	7.91
Jackfruit (chempedak) seed, raw	15.2	2.16	0.677	18.0
Chestnut, dried	33.9	4.04	3.89	41.8
Ginkgo seed, raw	5.52	0.980	0.0600	6.56
Lotus seed, dried	29.4	3.54	0.623	33.6
Pumpkin seed, dried	5.84	2.27	0	8.11
Sunflower seed, dried	5.38	1.80	1.79	8.97
Watermelon seed, dried – black	4.89	2.18	0.947	8.02
Watermelon seed, dried – red	4.14	1.66	1.61	7.41
Dried Seaweed				
Lave ("round seaweed")	25.9	1.95	6.42	34.3
Seahair ("fa cai")	47.6	0.593	0.0733	48.3
Dried fungi				
Jew's ear, black – large	41.9	36.4	1.72	80.0
– small	56.5	22.1	2.01	62.1
Jew's ear, white	56.5	1.27	3.76	61.5

[1] non-cellulosic polysaccharides

Table 2 compares the average composition of dietary fibre in the various food groups. Non-cellulosic polysaccharides constitute the major part of dietary fibre in all food groups. The highest proportions of cellulose are found in black fungi, while fruits contain the highest proportions of lignin.

TABLE 2

Percentage of non-cellulosic polysaccharides (NCP), cellulose and lignin in different food groups.

Food group	NCP	Cellulose	Lignin
Fruits	56	21	23
Vegetables	61	28	11
Nuts and seeds	71	16	13
Black fungi	56	40	4
White fungus	92	2	6
Seaweeds	86	6	8

Figures 1 and 2 illustrate the relationship between the approximate measure of crude fibre and the dietary fibre values estimated. While there is a strong correlation between the two values in fruits, the relationship is much weaker in vegetables. The value of "cellulose plus lignin" taken to represent crude fibre is inaccurate, but it would tend to make any relationship between crude and dietary fibre appear stronger because it assumes crude fibre to constitute a constant fraction of the various dietary fibre components, which is not the case.

A recent estimate of dietary fibre availability in the Singapore diet (15) was calculated by extrapolating crude fibre values of foods using a set of conversion factors suggested by Bright-See and McKeown-Eyssen (16). This practice, in the light of the present findings, is not wholly satisfactory. Indeed, a somewhat high value of dietary fibre availability was estimated (37g per capita per day), whereas subsequent unpublished data from a survey of food consumption in Singapore show an average daily per capita dietary fibre intake of only 13g (17).

With this in mind, the data presented here is a valuable beginning to updating the food tables of the region with respect to dietary fibre, particularly in view of the epidemiological studies of various diseases such as cancers,

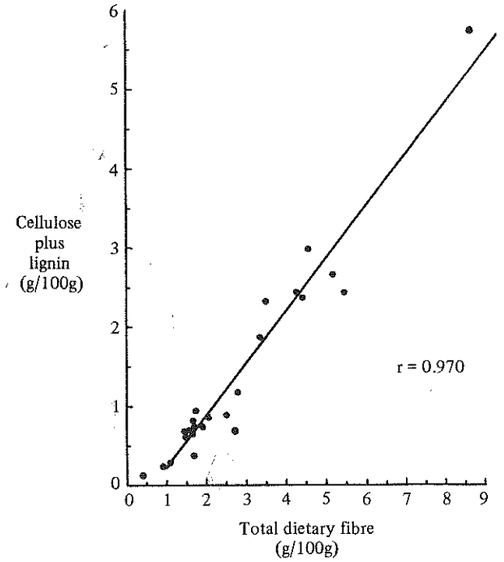

Fig. 1. Dietary fibre and "crude fibre" (cellulose plus lignin) in fruits.

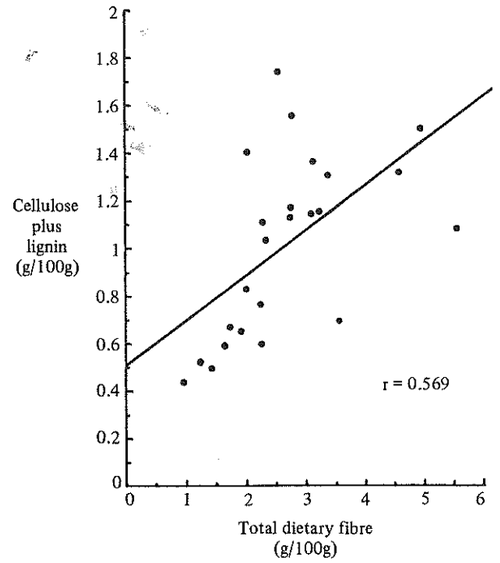

Fig. 2. Dietary fibre and "crude fibre" (cellulose plus lignin) in vegetables.

heart disease and metabolic disorders currently being carried out in the region. Efforts should be made to extend this work to cover the foods of the Southeast Asian diet more completely, including both raw and processed foods.

Furthermore, for health authorities in the region wishing to promote increased dietary fibre intake and medical personnel prescribing high fibre diets for individual patients, the data presented will enable endorsement of appropriate cheap and familiar foods, rather than relying on expensive pharmaceutical preparations of fibre or unfamiliar imported high-fibre foods.

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Singapore Dietitians' Association President's Report, 1986 – 87

The past year has been a busy and fruitful one for our Association as my report will reveal. Our achievements would-not have been possible without the interest shown and the great cooperation given by many of our members. I should therefore like to thank all those who have given our Association their co-operation and support in one way or another towards these achievements.

Let me now summarise the activities of the Singapore Dietitians' Association (SDA) in the past year:

MEMBERSHIP

Category	1986	1987
Full	30	30
Affiliate	19	23
Total	49	53

PROFESSIONAL/EDUCATIONAL MEETINGS ORGANISED FOR MEMBERS

12.5.1986 – "Computers & Dietetics" by Mrs Jo Norton from Cow & Gate, U.K.

24.9.1986 – "Renal Care from the Medical and Dietetic Aspects" by Dr Pwee Hock Swee and Mrs Magdalene Cheong.

29.11.1986 – "The Nutritional Value of Oriental Herbs" by Dr Robert Lin from U.S.A.

4.12.1986 – "Update on Diabetes Mellitus" by Miss Peggy Hwang from U.S.A.

17.1.1987 – Visit to Hagemeyer for microwave oven cooking demonstration by Ms Yupadee Mak.

THE FOLLOWING ORGANISATIONS REQUESTED ASSISTANCE/PARTICIPATION IN THEIR PROJECTS/ ACTIVITIES:

Training and Health Education Department (THE) –

THE invited the participation of the SDA in a joint/ project on nutrition education. This is a community service project to produce a series of three educational pamphlets on weight control aimed at three target population groups, namely, (1) School Children, (2) Adults, (3) the Elderly.

THE would produce the layout and artwork while SDA meet the printing cost.

SDA was successful in getting Nestle Singapore (Pte) Ltd to sponsor the printing of the pamphlets for the target group of school children.

A working group consisting of two of our members, (Mrs Tan Shok Eng and Mrs Myriam Young) and two health education officers from THE was formed to work on the content of the pamphlets.

The target date for printing of the leaflets was early 1987, but this was held over as THE had to give priority to the No Smoking Campaign.

Pharmaceutical Society of Singapore – Mrs Nancy Evans gave a talk on "Nutritional Requirements in Normal and Diseased States" at a seminar on Enteral Nutrition on 3rd August, 1986 at the Hilton Hotel.

Singapore Teachers' Union – Mrs Helen David gave a talk on "Diet and Health" at a Productivity Symposia for Teachers on 4th October, 1986 at the Dynasty Hotel.

Diabetic Society of Singapore – Mrs Thio Yee Fui, Ms Beatrice Pung and Mrs Helen David volunteered to be part of the medical teams heading discussion groups at their 15th Anniversary Annual Meeting on 30th November, 1986 at the Hyatt Hotel.

Singapore Amateur Athletic Association – Mrs Anna Jacob volunteered to serve in their medical subcommittee.

National Foundation for Digestive Diseases – Mrs Tan Wei Ling, Mrs Fatimah Lee, and Ms Susani Karta took part in their inauguration on 4th April, 1987, at the Mandarin Hotel, and spoke respectively on "Food and Your Health", "Eating In", and "Eating Out".

OTHER MATTERS

Our New Logo – Following the competition held in March 1986, where there was no winning entry, the Committee decided to commission an artist to design a logo for our association. Several designs were proposed, but the Committee found them unsuitable. It was then decided to reconsider previous entries, and the one submitted by Evelyn Fong was chosen.

The balance of the prize money, i.e. $30.00, donated by Mrs Tan Wei Ling was then awarded to the winning entry, who in turn donated it as payment for the final artwork.

Printed Stationery – Following the adoption of a new logo, headed writing paper and envelopes were printed for use by our Association.

Sub-Committee for Public Education – Following the publication of six articles by SDA in the Sunday Times from June 1986, the Committee decided that a sub committee should be formed to organise and edit any articles the SDA may be called upon to write for the public. This sub committee is headed and chaired by Mrs Yeong Boon Yee. The other members are Mrs Anna Jacob, Mrs Nancy Evans, Mrs Thio Yee Fui, Mrs Tan Shok Eng and Mrs Helen David. The committee is presently working on another series of articles for the Sunday Times as well as the Chinese newspaper – Zao Pao.

Singapore Professional Centre – The SDA has now been accepted as a member association of SPC. Ms Susani Karta and Mrs Beatrice Pung have been nominated as SDA's representatives.

Honorary Accountant – Miss Hwang Bon Sian has very kindly consented to be our honorary accountant.

"The Singapore Dietitian" – Special mention and acknowledgment goes to the Editorial Committee for their excellent work on our Journal – "The Singapore Dietitian". Our journal continues to be very well received and we have had many favourable comments and compliments. Personally, I would consider this to be the major achievement of our Association.

Ms. Helen David
President
Singapore Dietitians' Association

Fourth Annual General Meeting Of The Singapore Dietitians' Association

The Fourth Annual General Meeting and dinner of the Singapore Dietitians' Association was held on 26th April, 1987 at the Balmoral Room, Pinetree Town and Country Club, Stevens Road, Singapore.

A total of 19 members were present at the business meeting. The President's report for the year 1986–1987 is reproduced in full in this issue.

At the dinner following the meeting, Ms Susani Karta was the master of ceremonies. The meal was enlivened by a lucky draw with numerous prizes generously donated by the association's members and well-wishers. Guessing the weight of the cake kept the diners busy while waiting for the meal, the cake being a delicious carrot cake baked by the President, Mrs Helen David. Out of all the food experts present only one was to guess correctly!

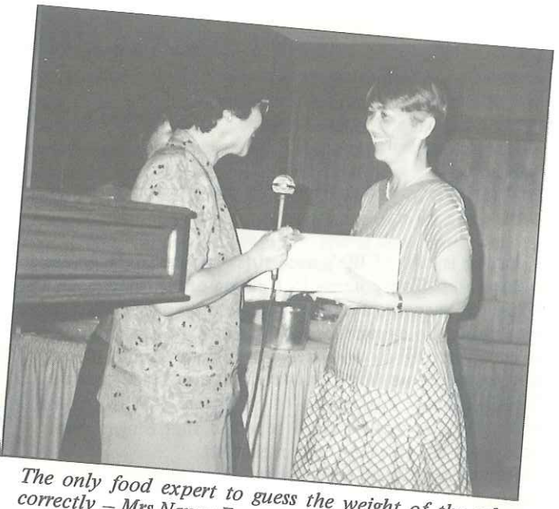
The evening was a good opportunity for our members to socialize, and served to enhance the spirit of cooperation between the profession and those in related fields.

Mrs Helen David, President of SDA, (2nd from left) hosting a table at dinner

Mrs Lynn Alexander, (right) tallying the results of the election at the AGM

(right to left) Ms Chai Kwok Hoey and Mrs Yeong Boon Yee entertaining guests at dinner.

(left to right) Master of ceremonies, Ms Susani Karta and Mrs Siak Siok Lian.



The only food expert to guess the weight of the cake correctly – Mrs Nancy Evans (right)

Ms Sonia Tay (left) of Natures Farm giving away a generous hamper.

A member recieving one of the many gifts distributed that evening.

(left to right) Dr Rahaman, Ms Susani Karta, Miss Gwee and Prof. Kiang.

EATING OUT

Susani K Karta, M.Sc., R. D.

Eating is one of life's necessities and certainly one of its pleasures. Singaporeans love eating out. It may mean a change of scenery, a chance to celebrate or socialize, an opportunity to experience new cuisines, or just an excuse to avoid having to do the dishes! Whatever the reason, eating away from home is becoming a national pastime. The Consumer Association of Singapore (CASE) in its November 1986 publication reported that Singaporeans eat at least one of every three meals out.

From unpublished survey data of the Singapore Cancer Registry on 3-day food intake in 98 Chinese adults in 1985, it was found that the average person took about 1.3 hawker meals daily. More breakfast is eaten out than dinner; twice as many lunches are eaten out than dinner.

In an earlier survey of 40 Chinese households, 20% of the households ate more than 50% of the meals out and 7% ate virtually all food out.

The extrinsic factors which increase the eating out frequency among the consumers in Singapore are due to:

1) Rising affluence and a higher standard of living of Singaporeans over the past decade resulting in greater expenditure on food and a willingness to pay more in return for physical comfort;
2) the increase in the number of women in the labour force which means less cooking within the home.

Thus the increased percentage in eating out is due to the need for meals that would not incur too much time and inconvenience.

The aim of this paper is to provide dietary guidelines for any one who eats out, regardless of whether he/she is on a diet; provide nutritional information on some commonly eaten food away from home; and give a few recommendations on how to select food that is healthy as well as tasty. It is important to choose low-fat foods, to recognize certain foods that are naturally high in fat and discover how to reduce that fat; to control calories, watch out on how food is being prepared and avoid dishes that focus on heavy batters or sauces. Then one will be able to cut down on dietary cholesterol, saturated fat, salt and calorie intake.

Susani K Karta, Registered Dietitian, graduated with a B.Sc. in Dietetics from Loma Linda University, California and an M.Sc. in Institutional Management from Kansas State University.

Formerly an administrative dietitian in Massachussetts General Hospital,Boston, Ms Karta is currently Technical Director for Nutrition in American Soybean Association, Singapore.

Role of Hawker Stalls in the Eating Pattern of Singaporeans

Singaporeans eat many of their meals at hawker centres, fast-food chains, staff/school canteens or cafeterias and restaurants.

According to the Ministry of Environment there are a total of 25,972 hawker stalls in Singapore of which 9,268 (35.7%) are cooked food stalls. These traditional hawker centres provide quick and inexpensive meals outside the home. They offer a greater variety of food than the Western fast food joints; however, surroundings are less hygienic and hotter. The recent arrival of air-conditioned hawker centres combining the physical comfort of fast food outlets and variety of food found in traditional hawker centres is providing some keen competition to the Western fast food chains.

In the Singapore Cancer Registry's survey of 67 hawker dishes in Singapore, 69% of the dishes were found to provide less than 1g dietary fibre and more than 30% calories from fat.

Hence the typical food available at hawker centres is usually high in calories, saturated fat, salt and low in dietary fibre. However, there are no "good calories" or "bad calories" nutritionally, but there are foods which give little but calories and others which give calories plus nutrients. In order to stay healthy we need over 40 nutrients for growth, repair, and regulation of body processes. No single food contains all of the necessary nutrients and different foods provide different mixtures of nutrients. Thus, with some basic nutritional principles, we need to choose a variety of foods from the three major food groups.

How does one choose a meal in a hawker centre if one is on a diet? How can one spot foods to fit one's calorie and nutritional needs? As a general rule, food is likely to be relatively **low** in calories if it is:

* **thin and watery** – like prawn mee soup, porridge, etc.
* **crisp but not greasy** – like popiah, vegetables and fresh fruits
* **bulky** – like salad, gado-gado and rojak

A food is likely to be relatively **high** in calories if it is:

* **greasy – crisp or oily** – eg. fried prawn mee, fried rice, fried oyster omelette, carrot cake and fried kuay teow
* **smooth and thick** – eg. laksa, curries, cream soup and rich sauces
* **sweet and gooey** – regular soft drinks, chendol, nonya cakes, etc.

Remember, no matter how many or how few calories are in a serving of food, a small serving of a $2.00 order instead of $3.00 will have fewer calories.

Fast Food Market in Singapore

The Survey Research of Singapore estimated that the fast food market last year in Singapore made around 179 million dollars. Indeed, fast food chains have sprung up around us at an amazing speed. Why are fast food outlets so popular? Certainly, it is not in terms of cost as fast food is not exactly cheap. A typical meal for one person can easily cost around $5.00 to $6.00.

It is popular because it is:

1) **time saving** – food can be served within minutes;
2) **convenient** – strategic location; friendly and polite service;
3) **comfort** – clean surroundings and air-conditioned; and
4) **aggressive promotional strategies.**

Typical fast food provides ample quantities of protein and is usually high in calories and fat. How does fast food rate in fat calories? (Refer to Table 1). Most fast foods provide ample amounts of B-complex vitamins, especially thiamin, riboflavin, niacin, and vitamin B_{12}. Hamburgers and other beef dishes are also excellent sources of iron and zinc. In most food chains it is possible to select meals providing at least one-third of the R.D.A. for several of the micronutrients. However, vitamins A, E, C, folic acid and several trace elements such as magnesium and calcium are likely to be in short supply.

Table 1. FAT CALORIE COUNT ON SELECTED FAST FOOD

FAST FOOD CHAIN	TOTAL CALORIES	% OF CALORIES AS FAT
MCDONALD'S		
Hamburger	255	35
Cheeseburger	307	41
Big Mac	563	53
Filet-O-Fish	432	52
Chicken McNuggets – 6 pc (without sauce)	314	54
French Fries (regular)	220	47
Shake, Chocolate	383	21
Apple Pie	253	50
BURGER KING		
Hamburger	290	40
Cheeseburger	350	44
Whopper, with cheese	760	53
Onion Rings (regular)	270	53
French Fries (regular)	210	47
Shake, Chocolate	340	26
KENTUCKY FRIED CHICKEN		
Original Fried Chicken, 1 pc (drumstick)	117	50
Original Recipe, 2 pc (wing and thigh)	393	61
Extra Crispy Chicken, 1pc (drumstick)	155	52
Extra Crispy, 2 pcs	544	61
French Fries	184	33
Mashed Potatoes & Gravy	97	25
Cole Slaw	121	56
Corn on the Cob	169	15
Roll	61	16
LONG JOHN SILVER		
Chicken Planks, 4 pcs	457	45
Fish w/batter, 2 pcs	366	54
Fish Sandwich	560	50
Shrimp w/batter, 6 pcs	268	44
Ocean Scallops, 6 pcs	283	41
Hush Puppies, 3 pcs	153	41
French Fries	288	50
Cole Slaw	138	52
PIZZA		
Cheese, regular crust (1/2 of 12 inch pizza)	653	17
Cheese, thin crust (1/2 of 10 inch pizza)	359	25
Cheese, thick crust (1/2 of 10 inch pizza)	460	12

Major nutritional drawbacks of eating at fast food chains include:

- lack of variety
- high caloric density of some of the foods offered
- high sugar content of most beverages
- high proportion of saturated fat; fat used in frying is usually saturated
- high sodium content of many foods
- heavily refined foods, and lack of dietary fibre.

Would you order a chicken sandwich if you knew it contained as much fat as in 3 cups of ice cream?[1] Probably not, as all of us are fat conscious. Increasingly, we are beginning to pass up red meat, full of saturated fats, in favour of low fat chicken and fish. We use margarine instead of butter and we fry food in polyunsaturated vegetable oil.

To accommodate our changing tastes some fast food chains have included chicken nuggets and fish sandwiches in their menus. We munch them blissfully along with an order of French fries assuming, naturally, that everything is cooked in vegetable oil. It isn't. Many fast food chains use beef fat for deep frying potatoes, chicken and fish because the consumers like the way it flavours food.

In the April 1986 issue of Science Digest, it was reported that the fatty acid profile of McDonald's Chicken McNuggets and Filet-O-Fish, and Burger King's Chicken Sandwich and Whaler resembled beef more than chicken or fish (refer to Table 2).

About 37% of fat in McDonald's Chicken McNuggets and Burger King's Chicken Fillet Sandwich and over 40% of that in the two chains' fish were saturated. Thus eating chicken or fish in a fast food restaurant is almost as bad as eating beef.

Thus in the U.S., the fast food chains are strongly being pressured to stop frying foods in heavily saturated fats and to start labeling their product ingredients, which will keep the people informed of their choices of their fast food fare. Enforcing food chains in Singapore to disclose this information will ultimately lead them to use more healthful ingredients. Moreover, the people who are concerned about such health problems as high blood pressure and high blood cholesterol have a right to know what is in the food they are eating.

Is fast food junk food? Contrary to common belief, a balanced diet may include fast food. There is no harm in eating fast foods occasionally, however a typical fast food meal of a burger with toppings, fries, and a shake has almost half its calories from fat. The Ministry of Health recommends that no more than 30% of daily calories come from fat. To limit the fat and carbohydrate content, consumers should select fewer items from the menu, choose smaller servings, reduce high fat, high-carbohydrate foods, avoid deep-fried food and be particularly careful about the choice of other foods eaten the same day.

Eating Out At Restaurants

A delight in eating away from home is trying new cuisines. There are always new foods to experience. Here are a few suggestions: 1) try to plan ahead before you select the restaurant or food, 2) contact your restaurant in advance and ask about the food and find out if special requests will be honoured; 3) once in the restaurant, ask questions; study the menu carefully; enlist the help of your waiter/waitress; ask how your selections are prepared; order for yourself. If you wish to cut down on portion sizes, choose appetizers as the main course. Order *a la carte* or share food with a companion; 4) insist that food be served the way you want it – for example, with dressing, topping or sauces on the side. And if your food does not arrive as requested, send it back.

Try asking these questions when you call ahead or before you order, to find out if the restaurant could:

1) prepare a dish using vegetable oil (corn and soybean oil) or margarine made with vegetable oil (rather than butter);
2) serve margarine (rather than butter) with the meal;
3) trim visible fat off meat or skin off poultry;

Table 2. FATTY ACID PROFILE OF SELECTED FAST FOODS*

FAST FOOD CHAIN	UNSATURATED FATTY ACIDS %	SATURATED FATTY ACIDS %	TOTAL FAT g
McDonald's			
French Fries	42.1	45.5	11.5
Filet-O-Fish	45.4	42.3	25.7
Chicken McNuggets	49.8	36.5	21.3
Burger King			
French Fries	37.6	48.8	11
Whaler	45.3	40.4	24
Chicken Fillet Sandwich	50.4	37.3	42

* Source: Science Digest, April 1986, The Fats in Fast Foods.
[1] 3 cups of ice cream (vanilla) has 42g of fat.

4) broil, bake, steam or poach (rather than saute or deep fry) meat, fish or poultry;
5) reduce portion size of cooked meat, fish or poultry;
6) prepare a dish without added salt or monosodium glutamate (MSG).

Here are some tips on reading menus;

1) Look for terms and phrases telegraphing low-fat preparation – "steamed"; "in its own juice"; "garden fresh"; "broiled"; "roasted"; "poached"; "tomato juice"; "dry broiled"; "in lemon juice".
2) Watch out for foods high in sodium that are: "pickled"; "in cocktail sauce"; "smoked"; "in broth"; "in tomato base".
3) Avoid foods that are high in saturated fat and cholesterol:
   * "buttery", "buttered", "in butter sauce"
   * "sauteed", "fried", "panfried", "crispy", "braised"
   * "creamed", "in cream sauce", "in its own gravy", "hollandaise", "in coconut milk", "curry"
   * "au gratin", "parmesan", "in cheese sauce", "escalloped"
   * "marinated" (in oil), "stewed", "basted"
   * "casserole", "prime", "hash", "pot pie"

When we are eating out at restaurants and cafeterias, they will usually offer a variety of foods we can mix and match as we please. There is no rule that says you have to select an appetizer, salad, entree, and a dessert. If it suits you, order only appetizers, a vegetable plate, or a salad as your meal. Many restauranteurs are sensitive to patrons on a diet and are more than willing to accommodate reasonable requests. In a cafeteria, you have the advantage of seeing what is available before you choose. Greasy, creamy or obviously oily foods which are likely to be high in calories are less nutrient dense, so be on the alert.

When eating **Chinese** cuisine, choose dishes that are boiled, steamed or lightly stir-fried in vegetable oil, rather than deep fried or sauteed. The following provides a nutritional analysis on selected ingredients frequently used at Chinese banquets (refer to Table 3). Although many Chinese dishes are high in sodium, you can ask that sauce be served on the side and that MSG be eliminated in the preparation. If you have high blood cholesterol, avoid dishes using king crab, lobster, organ meat, oyster, egg and pork fat for frying. Hunan and Szechuan-style food is high in calories as the dishes are commonly fried in hot oil.

Although many dishes are high in sodium, **Japanese** cuisine is, overall, suitable to those on low-fat diets. Pickled vegetables are low in cholesterol, saturated fat, and calories and Japanese entree fares like sashimi (raw fish) or sushi are ideal choices for dieters. Watch out for deep-fried dishes like tempura and for high-sodium soups and sauces. Ask your waiter to serve sauces on the side and keep them to a minimum. Dishes that feature tofu are especially recommended.

Sadly, the tastiness in Malay and Indonesian food is commonly attributed to the coconut milk, spices and frying except in gado-gado, satay, ikan pepes (grilled fish), soto ayam etc. Many of the Northern Indian dishes use a yogurt-based curry sauce, a good choice for those on special diets. For example, tandoori chicken and fish dishes, which are marinated in Indian spices and roasted in a clay pot, make a delicious and authentic meal. Often however, butter is used to baste the tandoori preparations and ghee is used in most Indian dishes. Ask if margarine can be used instead.

Those on reduced fat and cholesterol diets may feel that it is necessary to avoid steak houses altogether. In fact, steak houses, like seafood restaurants, may be a good choice, since food is most often prepared to order. Be sure to order your beef broiled without additional fat or salt. Choose lean varieties, like London broil, fillet mignon, round and flank steaks and ask that all visible fat be trimmed. If you are having a baked potato, eat it plain or with a modest amount of margarine or low-fat yogurt. If the restaurant has a salad bar, be selective on the ingredients. Be cautious about the dressings, they are usually high in calories. Coleslaw, potato salad, macaroni salad and creamed cottage cheese tend to be high in calories. Gelatin salads have lots of sugar and often contain fruits canned in heavy syrup. The plainer your choice, the better.

A good rule for dining out in French restaurants is to "keep it simple". Avoid French onion soup which is high

Table 3. NUTRITIONAL ANALYSIS OF SELECTED INGREDIENTS IN CHINESE GOURMET FOOD*, PER 100 GRAMS, UNCOOKED EDIBLE PORTION

ITEM	CALORIES kcal	PROTEIN g	FAT g	CARBOHYDRATE g	CALCIUM mg	IRON mg
Abalone	145	25	2	5	16	1.4
Bird's nest	70	12	.3	4	110	1
King crab	76	20	.5	2	55	2
Lobster	91	17	2	.5	29	.6
Scallop	82	16	.4	2	12	1.2
Sea cucumber	89	79	19	1	68	9
Shark's fin	113	26	.3	0	170	4.8

*based on "Food Composition Table for Use in East Asia", by the U.S. Department of Health, Education, and Welfare and Food and Agricultural Organization of the United Nations, December, 1972.

in calories and salt. Be wary of sauces, the heart of classic French cuisine. Most of the cream sauces are high in calories and sodium. To be safe, ask if your entree is in sauce and how that sauce is prepared. Perhaps you can order it on the side. Avoid dishes labelled *"au gratin"* as these often come with toppings of cheese and butter.

Nutrition-conscious diners have prompted the growth of health food and vegetarian restaurants. Most offer an array of salads, lots of yogurt-based dishes, food prepared in soybean oil (a polyunsaturated oil) and many selections made with gluten, soybean products, grains, nuts and seeds. Unfortunately for calorie watchers, some of these dishes may be high in fat – especially if made with large quantities of oils, high-fat dairy products or even nuts and seeds.

In summary, for those trying to control their diet these general guidelines should help when you eating out:

1) **Cut down on high-fat foods** such as fried foods, curries, highly marbled or fatty meats, margarine/butter. Salad dressing, cream sauces, gravies, and many whipped dessert toppings are also high in fat.

2) **Cut down on sugary foods** such as regular soft drinks and other sugar sweetened beverages such as fruit drinks, candies, syrups, jelly, fruit canned in heavy syrup, pies, cakes and pastries.

3) **Cut down on portion sizes.** Instead of having a $3 dish, just order a $2 dish.

4) **Select cooked foods with little or no added fat** and avoid deep-fat fried foods, which are high in calories because of the fat absorbed during cooking. For meat, trim off the visible fat; poultry, remove the skin, and either broil or roast on a rack. If braised or stewed, drain meat to remove fat. For fish, broil or bake. For vegetables, steam, bake or boil and occasionally change to stir-frying.

5) **Be sure to count the nibbles and drinks during social events. Cut down on or eliminate alcoholic drinks.** (refer to Table 4).

6) **Cut down on eating out frequency.**

In conclusion, whatever the reason, whether for convenience, necessity, or just to celebrate or socialize, eating out today plays an important role in our physical and emotional well-being. We need to maintain the principle of a balanced diet and to adopt eating habits to bring it in line with today's trend for "nutritious", "healthy", "fresh" and "light" meals. We should not get discouraged, as one can find nutritious and delicious food found anywhere, if one plans ahead of time and is selective in one's choice. Eating out therefore can still be an enjoyable event.

Presented at the Food and Health Day of the National Day of the National Foundation for Digestive Diseases, Public Seminar on "Eating In & Eating Out", Singapore, April 4, 1987.

Table 4. ALCOHOL AND CALORIE CONTENT OF ALCOHOLIC DRINKS*

BEVERAGE (alcohol % by vol)	SERVING SIZE (oz)	ALCOHOL (g per serving)	CALORIES (per serving)
Light wine (6–10%)	5	7–12	65
Wine (11.5%)	5	14	110
Wine cooler (3.5–6%)	12	10–17	220
Beer (4.5%)	12	13	150
Sherry (19%)	3	14	125
Light beer (3.7%)	12	11	100
Gin, vodka, rum, whiskey	1.5	14	100
Cordials, liqueurs, (25-100 proof)	1	3–16	50–100
Martini	2.5	22	156
Bloody Mary	5	14	116
Tom Collins	7.5	16	121
Daiquiri	2	14	111

*all figures are for drinks without ice

NUTRITION AND AGEING:

2. A Preventive Approach To Nutritional Assessment Of The Elderly - Developing A Risk Factor Check List

Anna Grace Jacob, M.Sc.

The elderly population (65 years and older) in Singapore is projected to reach 643.2 thousand or 18.96% of the population, by the year 2030. As that population increases, so does the demand for specific health care services for the elderly (1).

Though much is not known about the biological process of ageing, it is one that begins at birth and continues to its undeniable end, death. Ageing is accompanied by degenerative changes and the onset of illness.

While no one can estimate how far nutrition is responsible for the problems which arise with age, medical experts feel that some of the changes experienced are influenced by our eating habits.

This line of thought poses two major unanswered questions –

1. Are the degenerative changes that accompany ageing an essential part of getting old?
2. Can they be prevented or slowed down by proper nutrition early in life?

Estimating The Role of Nutrition in Relation to the Problems of the aged.

The White House Conference on Ageing (1971) stated that one-third to one-half of the problems of the aged may be related to the lack of good nutrition (2).

A seminar paper by R.K. Chandran from the Memorial University of New Foundland, Canada, stated that 30% of those above 65 years tend not to have enough of one or more nutrients (3).

What is Malnutrition?

Malnutrition encompasses more than pathological states that result from a deficiency of essential nutrients and calories. It also refers to significant deviation in dietary patterns which may produce undesirable "risk factors" (4).

These predisposing social, economic or psychological situations in which the elderly exist may prove as early indications of impending nutritional problems. These can be identified through careful medical, dietary and social histories of the individual. Constructive action can then be taken to avert the disastrous trends.

Anna Jacob graduated from the Women's Christian College, Madras, India, with a B.Sc in Nutrition and Dietetics and a M.Sc. in Food Service Management and Dietetics. She represented the Gerontological Society of Singapore at the WHO/IAG Conference on "Nutrition and Ageing" in Hyderabad, in Nov 1986.

The Objective of Developing "Risk Factor" Check Lists.

In line with the ancient proverb "prevention is better than cure", dietitians too must look for a preventive approach to the nutritional problems of the aged. This approach to nutritional assessment of the elderly would assure the elderly of an effective means of preventing or delaying the onset of illness or degenerative disease, and provide them with a better quality of life in old age, perhaps even a longer life span.

Standard nutritional procedures to date, assessed problems or deficiencies that have already occurred. For example: Blood tests may reveal the deficiency of one or more nutrients that has already occurred whether it be in a mild or moderate state.

Height and weight measurements assess weight gain or loss that has already occurred to some degree.

The preventive approach now being recommended aims to identify problems that may occur, from clear trends that are associated with certain life styles, health or eating patterns. Once the trend has been ascertained corrective measures can be applied before the problem or its symptoms develop.

Advantages of a Risk Factor Form of Nutritional Assessment

1. A risk factor check list can be developed for all age groups vulnerable to malnutrition.
2. It can be developed with special reference to each country, so that it reflects the cultural or racial peculiarities of that country.
3. Such a check list once developed can be used by even non-medical personnel to identify impending malnutrition. It can then be acted upon by responsible trained persons.
4. It can help to give caregivers a better understanding of the elderly and how to take corrective action.
5. It would help to prioritize the actions necessary for improvement, be they individual or community based.
6. It can help identify what persons might best take action necessary to prevent malnutrition.

What are the Common Risk Factors Amongst the Elderly Population?

Causes of malnutrition in the elderly may be classified as primary and secondary. These causes can also be

further classified as social and environmental causes, which call for social and public health measures, and physical and mental disorders, which call for appropriate medical treatment (7).

PRIMARY CAUSES	SECONDARY CAUSES
Ignorance	Impaired appetite
Social isolation	Masticatory inefficiency
Physical disability	Malabsorption
Mental disturbance	Alcoholism
Iatrogenic factors	Drugs
Poverty	Increased requirements(5).

However, a distinction may also be drawn between risk indicators, which may or may not be causal and risk factors which are causal.

The Gerontology Nutrition Unit at London University also found an interrelationship among the risk factors. This led to the development of a risk factor check list that could be identified and acted upon by non medical personnel.

1. Fewer than 8 main meals, hot or cold, in a week.
2. Very little milk.
3. Virtual absence of fruits and vegetables.
4. Waste of food even when delivered hot and ready to eat.
5. Long periods in the day without food or beverage.
6. Depression or loneliness.
7. Unexpected weight change, either significant gain or loss (a more valuable index of risk than either obesity or underweight)
8. Shopping difficulties.
9. Poverty.
10. Indication in medical records of disabilities, including alcoholism. (7)

Other risk factors for elderly living in institutions are monotony of menu, infrequent home style cooking, a lengthy delay between preparation or cooking and serving, which would affect the folate and vitamin C content, low fibre diets and complaints of constipation, low vitamin D intake coupled with lack of mobility and lack of exposure to the sun.

It must be pointed out that as many of these factors are interrelated, subjects in whom four or more factors are present are considered to be at risk of malnutrition (7).

It must be understood that each risk is only a potential danger sign, and must be considered in relation to the others. Thus, although depression or loneliness may not in itself affect nutrition, when it is found in combination with, for instance, waste of food or weight loss, the danger must be recognized.

Limitations of the "Risk Factor" Form of Appraisal.

To be of any effect the check list must be developed for each country so that it reflects the health risks of the elderly living in different environments.

As Wahlqvist (8) pointed out, while risk factors are an effective preventive approach to nutritional assessment, more research is essential to understand the predictive power of each of the risk factors individually and in relation to each other.

Conclusion

Developing a simple check list of risk factors poses a challenge to the dietitians working with the elderly in Singapore. It is important to incorporate this into teaching programmes to help the elderly avoid problems that can be identified early.

Foltz and Ryan (9) confirm that there are specific nutritional problems in the non-institutionalized older population, with older, single-living, lower-income adults being the group at most risk. They recommend that the following topics should be included in the nutrition programmes for the older population –

1. Appropriate weight management.
2. Nutrient density and cost effective food choices.
3. Nutrition as a part of medical therapy.

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BOOK REVIEW:

Diet Books — An Evaluation

2. Eat To Stay Well

Yeong Boon Yee, B.Sc., SRD,
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It is a common belief that if a little of vitamins and minerals are good for you, then a lot must be better and at least won't hurt.

This myth has been propagated and fostered by a great number of so-called "health books". Their writers, the meganutritionists, believe that food today is depleted of nutrients and recommend taking chemical supplements to compensate for this lack. They promise cures for a string of ailments from tiredness to cancer by dosing the patients with large amounts of every imaginable nutrient.

However, their theories tend to overlook the basic role of vitamins and minerals in human nutrition, as substances which the body requires in small amounts for its metabolism yet cannot make for itself, at least not in sufficient quantities.

The Recommended Daily Allowance (RDA) for nutrients, is considered by the proponents of meganutrition as far from adequate, though it is known to incorporate a safety factor which ensures that all the nutrients are available to the body in amounts slightly above the known requirements for man.

It is wise to note that utilizing synthetically manufactured nutrients to provide all nutrient requirements always leaves room for doubt. Being aware that our knowledge of food composition is hardly complete, certain essential nutrients may be missing from the commercial preparations and they may not be absorbed as efficiently as those derived from food.

On the social aspect of this issue, synthetic food propagators are losing out on the bulk, texture, colour, aroma, taste, and the fun of eating food.

Self-dosing with vitamins and minerals in amounts greater than the RDA is usually worthless and can be a potential health hazard. Any treatment of ailments with megadoses of nutrients must be administered only by physicians fully conversant with its risks and benefits.

In this series, six books have been reviewed of which three are by meganutritionists. The rest provide a more conservative approach, and propound that choosing foods properly can provide all the nutrients essential for a healthy life.

Lets Eat Right To Keep Fit
by Adelle Davis,
Unwin Paperbacks. London. 1984. Price S$8.20

First published in 1971 the book is still in great demand. A qualified nutritionist, Davis advises eating good, tasty food, but does not accept the RDA guideline.

She recommends a daily "pep-up" drink, partly synthetic and very high in nutrients, to supplement the "inadequate" amount in our diet. Other concoctions are also recommended for other situations and ailments.

She also lists an incredible number of nutrients which she apparently takes each day in equally incredible amounts. It starts with "a capsule containing 25,000 I.U. of Vitamin A and 2,500 units of vitamin D" and ends with "1000mg of choline and inositol," both of which are not recognized by nutritional authorities as essential B vitamins.

Davis' facts are right but her personal recommendations gleaned from her own experience are not. She has been incriminated in several legal cases involving people who have followed her diet.

For example, a two month old child died of irreversible abnormalities of heart rhythm after a large dose of potassium chloride was given to cure colic. Bone growth of another child was crippled by massive doses of vitamin A prescribed by her.

This book may have been a trail blazer, but its recommendations are too extreme, very confusing, extremely expensive and dangerous.

Meganutrition For Women
by Richard A Kunin. M.D.,
Signet Books. New York. 1985. Price S$13.45

Designed to "lead the modern day woman out of the unnecessary dilemma between good looks and good nutrition," this book recommends the use of nutrients to combat ailments.

For example, 12g of vitamin C per day was prescribed for premenstrual syndrome (PMS). To cure herpes he recommends the use of vitamin C and E, and 300g of zinc per day for a week. A pregnant lady with hair loss was treated with 25,000 I.U. of vitamin A daily.

Kunin propagates a low carbohydrate diet plan for weight loss and pinpoints excessive intake of carbohydrate, including that at RDA level, as the cause for most health problems.

Kunins' nutritional assessment is based on hair analysis, which is widely known to be unreliable since it is affected by factors such as soap, shampoo and perm lotions.

Most of his prescriptions of meganutrients are too drastic to say the least and are issued on an unfounded basis, like the examples cited above.

Reported cases of Vitamin A toxicity are not uncommon. Kidney stones have been linked to prolonged large doses of vitamin C, while the 12g cited above is 1500 times the RDA.

Bristol Diet
by Dr Alec Forbes,
Century Arrow Books. London. Melbourne. 1984.
Price S$14.15

An unorthodox diet plan intended to help prevent all diseases but which later evolved as a cancer cure at the Bristol Cancer Help Centre. Forbes' lifelong eating plan is based on his Get Well and Stay Well diet plans.

The first is a six week fast which allows only vegetable juice. This has to be made of 90% raw food and be strictly salt free to cleanse the body. The next stage, the Stay Well diet, allows more cooked vegetables as well as small amounts of egg, fish and lean meat.

The cancer cure diet allows just 500ml of vegetable juice and herb tea for 45 days in the belief that cancer grows on solid food eaten. The next step is a gradual introduction to the Get Well diet.

Forbes is convinced that non-vegetarian foods poison the body and cause cancer and other diseases, a fallacy prevalent among those touting vegetarianism as a cure for chronic diseases.

The juice fast is extremely drastic. While it is possible that growth of cancer cells may be arrested if they are starved, the near starvation diet propagated will decrease the efficiency of the immune system which can help fight the disease.

Complete Asian Health and Diet Plan
by Mary Trevelyan Hodder.
Times Books. Singapore. 1985. S$24.50

A well compiled book covering the basics of nutrition and offering a sensible weight loss plan. Its only original and Asian part is the appendix which gives a breakdown of the nutrient content of local dishes such as *mee rebus* and chicken rice.

Easy to read, enjoyable and fairly thorough on the fundamentals of nutrition and dieting. However, there are a few mistakes as Hodder relies on "pop" nutrition for references.

She cites vegetarian diets as lacking in vitamin D and protein, while they are usually lacking in iron, B^{12}, and trace minerals. Cod liver oil is listed in the food table as 100% protein and containing 18,000 mg of calcium. Actually it is 100% fat and has 18,000 mg of vitamin A.

Nutrition for Life
by Catherine Saxelby,
Reed Books. Australia. 1986. S$11.90.

Stands out from the other books on nutrition reviewed as it puts up–to–date, accurate nutrition information in a simple, attractive and readable format.

The author is a qualified nutritionist who covers the current hot topics in food, such as the importance of eating less salt to prevent hypertension and the role of fat and cholesterol in cardiovascular diseases.

She has tried to dispel the myths about vegetarian diets and food additives, and provides an enlightening discussion on the pros and cons of fast foods which form a significant part of modern diets.

This pictorially pertinent presentation is directly aimed at the health conscious and is effectively and simply packaged. Highly recommended.

Uses and Abuses of Vitamins – Food versus Pills
Mark Wahlqvist and Soo Huang.
Sun Books. Melbourne. 1983. S$30.00

A simple, factual and balanced view on vitamins by a nutritionist and a doctor. They examine which nutrients are essential and their role in maintaining health, and discuss the effects of taking extra isolated nutrients advocated by meganutritionists.

A breath of fresh air among the long winded books on this topic. Besides being an excellent guide for the health conscious layman, it should make the vitamin "pill–popper" think twice. Unfortunately, the steep price and unattractive packaging may be a deterrant to the interested.

In Brief

Beware of snacks made with "pure vegetable oil".

In an effort to reduce the amount of saturated fat in the diet contributed by animal fat, health-conscious people make sure to buy snacks labelled "made with 100% vegetable shortening" or "pure vegetable oil", avoiding anything made with animal fat such as lard or beef tallow. Unfortunately, both palm and coconut oil – two vegetable oils widely used in making a variety of snack items – are more highly saturated than beef fat itself. In fact, while beef tallow is 50% saturated, both palm and coconut oil are more than 80% saturated.

Manufacturers use saturated vegetable oils as they are cheaper and do not become rancid so quickly.

The flexi-labelling system whereby food ingredient lists can say, for instance, "contains one or more of the following : soyabean, palm and/or coconut oil" spares manufacturers the expense of changing labels every time they switch oils.

The message here is – look beyond the vegetable oil banner displayed prominently on snack packages and scan the ingredient list for the words "coconut, palm kernel and palm oil". It is best to purchase snacks made with cotton seed, corn, safflower, sesame or soyabean oil which are higher in mono-or polyunsaturates than saturates. As a final suggestion, consumers should not be misled by the words "cholesterol-free" as saturated vegetable oils which do not contain any cholesterol can raise its level in the blood like all saturated fats.

What bacon and bottle teats have in common

Nitrosamines have been proven carcinogenic in more than 30 species of animals, and so the fact that these compounds or their precursors are present in some foods warrants concern. In the West, the major source of nitrosamines in the diet is from nitrites added to cured meat, and in particular fried bacon. Dried fish is the major contributor of nitrosamines in the Japanese diet, followed by beer. The formation of nitrosamine in foods can be partially inhibited by ascorbate or erythrobate compounds. Current USDA regulations require that 550mg/kg ascorbate or erythrobate be added to cured bacon.

Nitrosamines can also arrive in foods through migration from packaging materials. Products made from rubber contain nitrosamines and it has been confirmed that nitrosamines can migrate from baby bottle teats to water. One study found that additional nitrosamines are formed when rubber is exposed to solutions similar to human saliva. Thus it is not advisable for mothers to use rubber teats or pacifiers, and silicone alternatives are preferable.

Another source of nitrosamines is their formation in the body from food nitrates. Again this can be inhibited somewhat by ascorbic acid, lending weight to the hypothesis that vitamin C is a protective agent against certain cancers.

While it is recognised that diet is not the major source of nitrosamine exposure – tobacco, new car interiors and cosmetic usage contribute much more – food safety regulatory agencies are concerned that nitrosamine levels in food be kept as low as possible.

Source: Nitrate, Nitrite and Nitroso Compunds in Foods. A Scientific status Summary by the IFT Expert Panel on Food Saftey and Nutrition. Food Technology, April 1987, pp 127–136.

Meetings

Sept 9-14, 1987
14th Annual Meeting and Educational Programme of the American Association of Diabetes Educators

Orlando, Florida

Sept 11, 1987
Diabetes mellitus: maximizing nutrition intervention
American Dietetic Association

New York

Sept 28 – Oct 2, 1987
7th International Congress of Food Science and Technology
Raffles City Convention Centre,
Singapore

Contact: Mr Theng Chye Yam,
Chairman,
Organising Committee,
c/o Singapore Professional Centre,
Block 23, Outram Park,
03-129,
Singapore-0316.

Oct 6-7, 1987
Conference on Assessment of Nutritional Status of the Individual
AHF Food and Nutrition Council

New York

Oct 26-29, 1987
5th Asian Congress of Nutrition

Osaka University
Osaka, Japan

Nov 13, 1987
Food sensitivity and allergy in children
American Dietetic Association
Los Angeles, CA

Feb 18-23, 1988
International Food Convention
Central Food Technological Research Institute
Mysore, India

Books

Pure, White and Deadly
John Yudkin. Viking, 9.95.

It is 14 years since the first edition of this book appeared. Updated to take account of the latest research findings, the book now puts an even stronger case against sugar. Professor Yudkin maintains his belief that excessive sugar consumption is linked to a wide variety of diseases. In the final chapter he examines the pressures mounted by sugar manufacturers in defence of their product.

Healthy Eating on a Low Budget
Maggie Black, Blandford Press, 9.95.

This book demonstrates that a healthy diet, high in fibre and low in fat and sugar, is possible even for those on a tight budget. Eleven chapters of general nutrition are followed by 56 pages of recipes. Basic nutrition principles are covered, with sections devoted to feeding babies, growing children and the elderly, and eating in pregnancy and lactation. There is also advice on feeding the sick and suggestions are offered on suitable snacks to leave for "latch-key" children. The recipes include sauces, main dishes, salads, vegetables and desserts, and there are tables and food lists to accompany.

Abstracts

INFLUENCE OF A MACKEREL DIET ON PLASMA LIPOPROTEINS AND PLATELET FUNCTION. *T. A. B. Saunders, L. Lovat, M. Mistry, K. Upton, Proc. Nutr. Soc. 46:5A (abstr.), 1987.* The effects on plasma lipoproteins and platelet function of a diet containing 200g mackerel/day taken for two weeks in ten healthy young men are reported. The mackerel diet increased HDL cholesterol and reduced plasma triglyceride levels. There was also evidence of changes in platelet synthesis or catabolism as well as function. Omega-3 eicosapentaenoic acid was rapidly incorporated into the platelet lipids at the expense of omega-6 arachidonic acid, and induced platelet aggregation was decreased after one week of the diet, although it returned to baseline values after two weeks.

A STUDY AMONG DIETITIANS AND ADULT MEMBERS OF THEIR HOUSEHOLDS OF THE PRACTICALITIES AND IMPLICATIONS OF FOLLOWING THE PROPOSED DIETARY GUIDELINES FOR THE UK. *I. Cole-Hamilton, K. Gunner, C. Leverkus and J. Starr, Hum. Nutr.: Appl. Nutr. 40A: 365-389, 1986.* This project, carried out by the BDA's Community Nutrition Group, involved comparing one-week dietary intakes of 472 dietitians and their household members with the dietary goals proposed by NACNE. The participants who did not "achieve" the goals (93%) kept a second week's record of their food intake while trying to conform to the goals. The mean nutrient intakes for participants as a group were initially within the short-term NACNE goals except for fat, and the long-term goals for total fat and saturated fat were achieved when participants were consciously altering their diets. However, when analysed individually, there were 57% who still did not achieve the goals in the second week. Since the majority of participants claimed they enjoyed their food, the authors feel that criticisms of the dietary guidelines as "unrealistic" are not warranted.

EFFECTIVE WAYS OF REDUCING SATURATED FAT INTAKE. *A. Wise, G. M. Lockie and J. A. Liddell, Health Ed. J. 45 (4): 1986.* The authors investigated the effectiveness of different health education messages in reducing saturated fat intake of staff and students at a Scottish college of tertiary education. The most effective messages were found to be to substitute skimmed milk for full cream milk and use low fat spread in place of other spreads. Of lesser potential in reducing saturated fat intake were messages to use low fat cheeses, abstain from fried food, especially chips (French fries), use polyunsaturated fat in all recipes and trim visible fat from meat.

ZINC AND THE FOETUS. *K. Simmer and R. P. H. Thompson, J. Royal Soc. Health, 106: 166, 1986.* This is an overview of the role of zinc in foetal development. Biochemical methods of assessing zinc status are described, and studies which have shown that maternal zinc deficiency is associated with retarded intrauterine growth are discussed. The authors draw attention to reports that routine iron-folate supplements impair zinc absorption, and they stress that these supplements should not be routinely given to pregnant women, but only when clinically indicated.

DOES BREASTFEEDING PROTECT AGAINST INFECTIONS IN INFANTS LESS THAN 3 MONTHS OF AGE? *J. M. Leventhal, E. D. Shapiro, C. B. Aten, A. T. Berg and S. A. Egerter. Paediatrics, 78: 896, 1986.* A case-control study of 281 pairs of infants revealed that breast feeding was protective against infections. The criteria measured was admission to hospital for an infectious illness during the first three months of life. The results may, however, be confounded by differences in the probability of breastfed and formula-fed infants being hospitalised, given the same degree of illness. When an attempt was made to control for severity of illness, the protective effect of breastfeeding appeared substantially reduced.

ASSOCIATION OF SERUM LIPIDS WITH COFFEE, TEA AND EGG CONSUMPTION IN FREE-LIVING SUBJECTS. *M. S. Green and E. Jucha, J. Epid. Comm. Health 40 : 324-329, 1986.* In this study of 658 men in Israel, a significant positive association of coffee consumption with total serum cholesterol was found. Tea consumption was negatively associated with serum cholesterol (significantly). Higher levels of egg consumption did not elevate serum cholesterol. The authors conclude that eggs added to the diet may have a hypercholesterolaemic effect, but when consumed as part of a regular diet their affect on serum lipids may be limited.

New Books

Patient Problems in Clinical Nutrition

ed. M.I. Wahlquist and J. S. Vobecky for IUNS and WHO.

John Libbey and Co. Ltd: London, 1987, 480pp, softcover 10.00, hardback £17.50.

This is a practical text book based on case studies from around the world. It first addresses the question, "what is clinical nutrition?", and then goes into problem evaluation and solving. A final section is devoted to resources – texts, journals, tables, charts and formulae. This book would be a useful addition to the shelf of any dietitian, particularly those involved in teaching human nutrition.

The Food Intolerance Diet Book

E. Workman, A. Jones and J. Hunter. Martin Dunitz, 1987, softcover, 128pp, £3.95.

Based on the authors' work in the gastroenterology department at Addenbrooke's Hospital, Cambridge, this is mainly a recipe book designed to help patients suffering from food intolerance. It is an update of the earlier 1984 edition and covers irritable bowel syndrome, migraine, asthma, rhinitis, coeliac disease, Crohn's disease, hyperactivity in children and arthritis. Five diets are provided: an exclusion diet for identification of the trouble-making foods, wheat-free, milk-free, egg-free diets and a diet for sufferers of arthritis, although the authors admit a dietary cause for this disease has not yet been established.