Nutrition knowledge and practices of Samoans in Auckland

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Abstract

Knowledge of the fat content of foods and eating behaviour in relation to fat, fruit and vegetable intake was assessed in three Samoan church communities in Auckland. Participants (n=471, response rate 77%) judged 23 commonly eaten foods on a four point fat content scale from 'none' to 'a lot'.

Appropriate estimates of fat content were made by >80% of people for 9/23 foods. Fat content was under-estimated for eggs (by 92% of people), luncheon meat (79%) and margarine (65%), and over-estimated for taro (62%). Women were more likely to give a correct response than men. Samoan men and women had similar knowledge and misconceptions about the amount of fat in food compared to Maori and non-Maori from the life in New Zealand Survey (LINZ). Samoans were generally better informed about the amount of fat in margarine and cheese than Maori or non-Maori but less informed about the amount of fat in butter and takeaways compared to non-Maori. Only 33% of Samoan women and 16% of men frequently or always ate green vegetables at dinner, 35% of women and 23% of men frequently or always removed the fat from meat and 27% of women and 31% of men frequently or always diluted coconut cream. More than 40% of both men and women added salt at the table and only 25% of men and 43% of women had fruit daily. Over half (50-55%) had fried food 1-3 times a week and used high fat milk. Men were more likely to use butter than women and they use more per slice of bread. Only 19% of people reported having takeaways more than once a week.

In conclusion, Samoan New Zealanders had similar nutrition knowledge to other New Zealanders but several eating patterns such as low fruit and vegetable intake, not cutting the fat off meat and adding salt at the table emerged as potential targets for education programmes.

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Introduction

Pacific people in New Zealand are known to carry a high health burden compared with European New Zealanders[1], and they have a higher prevalence of obesity, diabetes[2], and heart disease[3]. Diets that are high in saturated fat[4,5], and salt[6], and low in fruit and vegetables are known to contribute to these diseases. It is possible however, to make small dietary changes that have large health benefits[7,8], such as making low-fat and low-salt food choices, using food preparation methods that don't require adding fat or salt and eating more fruit and vegetables[9].

Current nutrition goals and guidelines in exist to aid continual improvement in the health and well-being of all New Zealanders[10]. However, anecdotal evidence suggests that language, cultural differences, access to health care and other factors may be barriers which hinder the transfer of such information to Samoan communities. Also, little is known about the current dietary habits of Samoan New Zealanders or their knowledge and attitudes on healthy eating, particularly in relation to dietary fat. The aim of this study was to determine current knowledge of the amount of fat in commonly eaten foods and nutrition related behaviour in three Samoan communities.

Methods

The sample for this study was drawn from the Samoan Ola Fa'autauta Project, a community-based health promotion project based in three Samoan churches in Auckland, New Zealand. An initial census of all church members, and their households, aged over 20 found that 609 people were eligible for inclusion in the study. Cross-sectional data was collected during 1994-95 and ethical approval for the study was given by the University of Auckland Human Subjects Ethics Committee.

Survey procedures

Participants were asked to answer a series of questions on nutrition knowledge and behaviour available in either Samoan or English. The first related to nutrition knowledge and asked

participants to judge twenty-three commonly eaten foods on a four point fat content scale from 'none' to 'a lot'. The scale included a 'don't know' response. Responses were compared to the actual amounts of fat in these foods. Where fat contributed to 60% or more of energy 'a lot' was considered to be the correct response. Two responses, 'some' or 'a lot', were accepted where fat contributed between 40% and 60% of energy. The responses 'none' or 'a little' were accepted for fish and bread and 'none' was accepted for green vegetables and taro. To identify possible ethnic differences in fat knowledge, responses for ten of these foods were compared with responses to identical questions from a nationally representative sample of Maori and non-Maori participants aged 15+ in the Life in New Zealand Survey, 1991 (LINZ)[11]. Finally, questions were asked on eating behaviour in relation to fat, fruit, vegetables and salt. Possible responses for questions on green vegetables, meat and salt were 'never', 'rarely', 'occasionally', 'frequently' or 'always'. Responses for questions on frying or roasting foods, eating takeaways, drinking traditional Samoan cocoa and eating fruit were 'never', 'less than once a month', '1 or 2 times a month', 'once a week' 2 or 3 times a week' or 'everyday'. Questions were included on the type and amount of spreads used and also about milk. Photo-cards depicting various amounts of spread on bread and various types of milk were provided. All questions were self administered and trained interviewers were available to give assistance.

Table 1. Subject characteristics (mean ± SD)

	Males	*Females*
N (%)	191 (40%)	280 (60%)
Age, yrs	43±14	41±14
Weight, kg	96.2±17.8	91.6±19.3
BMI, kg/m2	32.6±5.6	35.2±6.9
WHR	0.95±0.08	0.88±0.09

BMI = body mass index
WHR = Waist:Hip ratio

Statistical analysis

Chi-square tests on proportions were used to determine statistically significant differences between the ethnic groups. Standard chi-square tests and relative risk calculations were used for comparisons by sex, age and education. Cochran-Mantel-Haenszel (CMH) statistics were used to compare adjusted proportions. All statistical tests were carried out on SAS v. 6.10 for Windows[12].

Results

Of those eligible for inclusion in the study, 471 participated (191 men and 280 women) giving a response rate of 77%. Characteristics of the subjects are given in table 1. There were more women than men in the survey and they were, on average, two years younger. Men had a higher mean weight than women although women had a higher mean body mass index (BMI). Mean BMI values for both sexes were high, as were waist:hip ratios indicating that over 50% of the population were obese.

Appropriate estimates of fat content were made by over 80% of participants for 9 out of 23 foods (Table 2). These foods were mainly meats; fish, mutton, *povi masima* (salty beef), pork and chicken but included fast-foods, takeaways, KFC, meat pies as well as green vegetables. Tinned corned beef, ice-cream and doughnuts were also well classified according to fat content with 70% or more responding appropriately. Approximately two-thirds of people gave appropriate responses for the amount of fat in butter, coconut cream, bread, cakes and milk. Responses were lower for cheese (47%) and sausages (41%) and lowest for taro (38%), margarine (35%), luncheon sausage (21%), and eggs (8%). For most foods, females were better at estimating fat content than men. Eleven of the thirteen significant differences were women with higher scores. There were very few differences in knowledge with age. Potential differences in age for butter, cakes, sausages and eggs were partly explained by differences in education, with those under 40 being more likely to have a tertiary education. After adjusting for age and sex, those with a tertiary education generally had a better knowledge of the fat content of foods than those with a secondary education and the differences were significant for takeaways, doughnuts, butter, cakes and eggs. Taro proved to be the exception for most of these trends. Overall, scores were low with only 38% appropriately stating that it had no fat. A higher likelihood of correct responses came from men, older people, and less well educated people.

When compared with data from the LINZ survey, Samoan men and women generally gave similar responses to other New Zealanders for questions on the fat content of foods (*Figures 1 and 2*). Samoan men and women were better informed about the amount of fat in margarine and cheese than Maori or non-Maori New Zealanders and less informed about the amount of fat in butter and takeaways. All three ethnic groups were very poor at estimating the amount of fat in eggs, cheese and margarine.

The frequency with which common fat reducing behaviours and other nutrition habits were practised by men and women is shown in figure 3. Only 33% of Samoan women frequently or always ate green vegetables or green salad at dinner, significantly more ($p<0.001$) than the percentage of men (16%). Thirty-five percent of women and 23% of men frequently or always cut the fat from meat and 22% of women and 12% of men frequently or always removed the skin from chicken. The difference in frequency between men and women was significant ($p=0.006$ and $p=0.005$ respectively) for both these behaviours. Over two thirds of people said they frequently or always added salt to their cooking and

Table 2. Knowledge of the fat content of foods by sex, age and education

			Correct response (%) by:					
			Sex		*Age*		*Education†*	
Food	*Fat*	*All*	*M*	*F*	*<40*	*40+*	*2*	*3*
KFC	4	94	91	96*	95	93	92	99
Pork	3	91	92	91	90	92	90	92
Takeaways	3	91	91	91	90	92	88	97*
Chicken (with skin)	3	90	88	92	90	90	87	96
Mutton	3	88	91	85	85	90	88	85
Povi masima	4	87	86	88	85	88	84	89
Green vegetables	1	86	83	88	84	87	86	86
Meat pie	3	83	81	85	83	83	80	88
Fish	2	83	81	85	85	82	83	89
Tinned corned beef	4	77	71	81*	73	80	74	79
Ice cream	3	73	66	78*	80	68*	70	85
Doughnut	3	70	61	77*	73	68	66	83*
Coconut cream	4	67	58	74*	66	68	63	72
Bread	2	66	76	60*	67	66	67	64
Butter	4	65	62	67	72	59	61	88*
Milk (whole)	3	64	57	68*	66	62	63	69
Cakes	3	60	52	66*	70	53	57	88*
Cheese	4	47	36	54*	48	46	47	51
Sausage	4	41	30	49*	36	46	39	39
Taro	1	38	48	31*	29	45*	41	22*
Margarine	4	35	28	40*	41	30	33	46
Luncheon sausage	4	21	16	25*	21	21	20	26
Eggs	4	8	7	8	11	5	8	13*

Fat content: 1 = None, 2 = None/A little, 3 = Some/A lot, 4 = A lot.
†Education: 2 = secondary education, 3 = tertiary education
** Significantly different from males, <40 years or secondary schooling each adjusted for the other descriptors.*

more men (p=0.013) said they frequently or always added salt to cooking than women. Forty percent of women and slightly more men frequently or always added salt at the table whereas less than 30% of men and women frequently or always diluted coconut cream. Further dietary behaviours are shown in Table 5.

Men reported having food fried or roasted in fat or oil more regularly than women although there was no significant difference in the distributions. Takeaway foods were not consumed very often with 65% of men and 66% of women having takeaways 1 - 2 times a month or less. Similarly, people did not drink traditional Samoan cocoa very often. Women consumed fruit more often than men (p=0.001) and 43% had fruit every day compared to 25% of men.

Some dietary behaviours varied with age and education with the older members of the community being less likely to add salt at the table, eat takeaways and fruit than those under 40 years. Those with a tertiary education were least likely to add salt to cooking or at the table and were most likely to have green vegetables at dinner. Forty-two percent of men in the survey usually used butter on bread, 31% used margarine and 18% used both (not shown). Females, on the other hand,

Figure 1. Male perceptions of the amount of fat in various foods

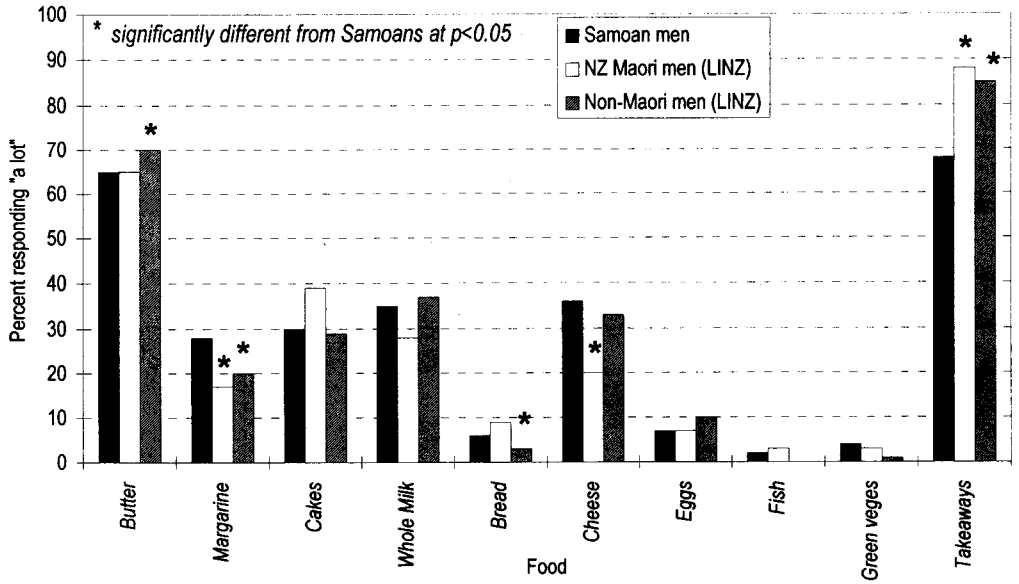


Figure 2. Female perceptions of the amount of fat in various foods

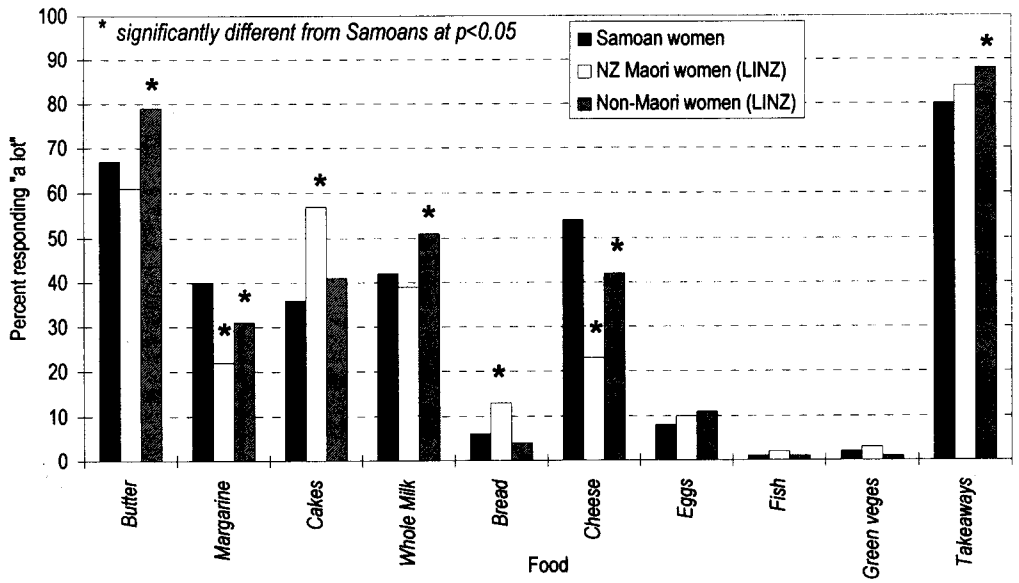


Table 3. Frequency % of nutrition related behaviours

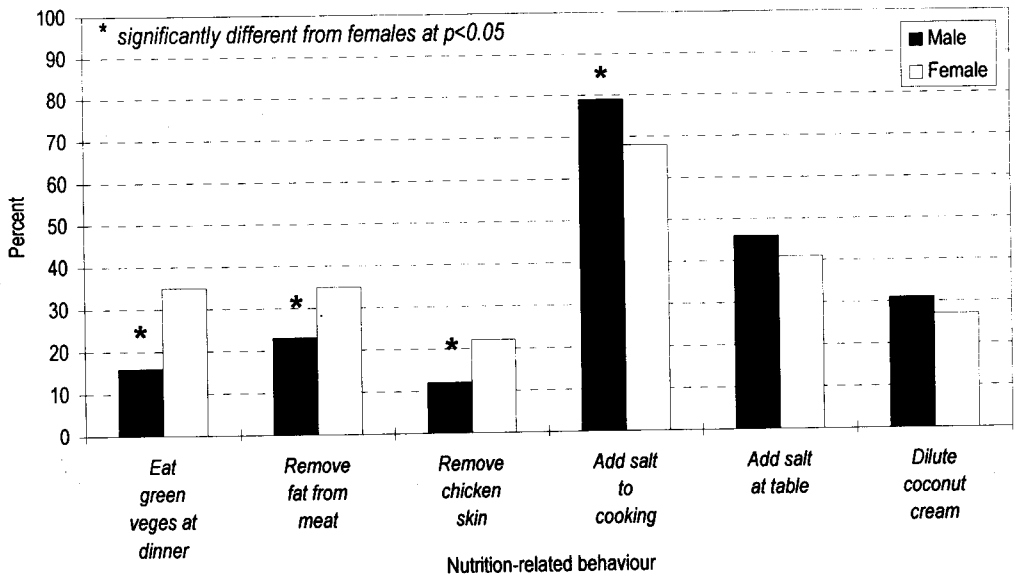
	Frequency %				
	< 1/month	*1-2/month*	*1/week*	*2-3/week*	*Daily*
Male (n=188)					
Fry or roast foods in fat or oil	18	20	22	32	8
Eat a takeaway food	33	32	15	19	2
Drink koko Samoa	42	30	10	14	3
Eat fruit**	10	9	18	37	25
Female (n=277)					
Fry or roast foods in fat or oil	25	22	16	34	4
Eat a takeaway food	41	25	17	16	1
Drink koko Samoa	45	35	6	13	1
Eat fruit	3	7	15	32	43

*** Significantly different from females at p<0.001*

were more likely to use margarine (47%) than butter (26%). There was a significant difference in the type of spread used between males and females (p=0.001) and also in the amount of spread used (p=0.002), with males using more spread per slice of bread. Full fat homogenised milk (3.3% fat by weight) was the most common type of milk used by males (59%) and females (54%). Less than 20% of participants used low fat milk (0.5% fat by weight).

For some of the foods it was possible to make direct comparisons between knowledge of the amount of fat in a particular food and the dietary behaviour in relation to it. However, there were no statistically significant differences in dietary behaviours between those who correctly estimated the amount of fat in the foods and those who did not. This suggests that there was no direct relationship between peoples knowledge of the fat content of food and their food preparation methods.

Figure 3. Frequency of nutrition-related behaviours, by sex



Discussion

Twenty-one of the 23 foods included in the nutrition knowledge section of the questionnaire represent major sources of fat in the Samoan community's diet. Green vegetables and taro were included as common low fat foods. In general, participants had good knowledge of the amount of fat in many of these foods, particularly those where the fat portion can be easily seen or tasted, for example, meat and Kentucky Fried Chicken. Knowledge waned however, with foods where the fat portion was less noticeable, for example fat in luncheon sausage, cakes or eggs. As in the LINZ survey, people more often said that there was a lot of fat in butter than in margarine despite them containing equal amounts. This may be attributed to the perception of margarines as a 'healthier' choice than butter. Milk is a difficult food to classify according to fat content because when measured in grams the fat content of whole milk is 4%. However, when fat is expressed as a percentage of energy the fat content is 53%. This probably causes some confusion and may account for the low percentage of people who correctly estimated the fat content of whole milk.

Most people correctly thought that green vegetables did not contain fat, however, it was concerning that very few people, particularly women, realised that taro contained no fat. Members of the communities often described a feeling of fullness after eating taro and this may be linked incorrectly with the presence of fat. Samoan people often associate taro consumption with how 'big' a person is although it is not clear whether big is translated as *la po'a* (solid, big muscles, tall) or *puta* (fat tummy, fat cheeks). Moreover, the widespread belief 20-30 years ago that starchy foods like potato and taro were the cause of obesity may also have contributed to this misconception. A further reason may be that taro is often eaten with coconut cream which does contain fat. This is a less likely explanation however, as coconut cream was listed separately in the questionnaire and 26% of women and 42% of men underestimated the fat content or did not know how much fat was in it.

For most foods, women were more likely to give a correct response than men. This was not surprising as women were nearly always responsible for the planning and preparation of meals. The differences observed with age and education are likely to be related to the different influences on diet of the Samoan and New Zealand environments. Most participants aged over 40 years were born in Samoa and this group appeared to have a better knowledge of traditional foods such as taro. Conversely, younger people, who were also more likely to have a higher education and to have been born in New Zealand had a better knowledge of 'western' foods such as ice-cream. Samoan men and women generally had similar knowledge and misconceptions about the fat content of foods to other New Zealanders. Lack of nutrition knowledge among Samoans is unlikely to explain their higher non-communicable disease incidence compared to Maori and Caucasians[2,3].

Despite having relatively good knowledge of the amount of fat in commonly eaten foods, most participants in the study had not adopted behaviours recommended by the nutrition taskforce of New Zealand[10]. A similar study in Australia also found that the general public had trouble translating concerns over a range of food and nutrition issues into effective action[13].

The lack of conformity with nutrition guidelines in this study may have been for a number of reasons. Firstly, cultural, language and socio-economic factors may have limited their exposure to current recommendations. Alternatively, the communities may lack the motivation to change their habits,[14] or there may be a perception that the recommendations do not belong to the Samoan community[15]. Further, people in the communities may be aware of the recommendations but not consider them a priority in their family and community context. The latter explanation is supported by the observation that in Samoan culture the social value of food is perceived to be greater than the health value[16]. Traditionally, animal meats (pork, pigeon, turtle) were reserved for special occasions and people of rank[17]. This fact coupled with the expense and rarity of such foods afforded meat high social status. Vegetables on the other hand were readily available and were used in everyday meals giving them lower status. Thus, for Samoans living in New Zealand, the value of food is in its ability to preserve traditions and help develop the community's unique identity[16]. Meat plays an important part in this process, highlighting the need for health promotion strategies that are sensitive to the social value of food but also increase its health value. A dish of corned beef that has had the fat heated and poured off, is mixed with a variety of vegetables and served with taro is a good example of a meal that has both high social and health value. Young Samoans are at various stages of transition between Samoan and New Zealand cultures and therefore NZ based rather than traditional values may be influencing their food choices and preparation methods.

" ... for Samoans living in New Zealand, the value of food is in its ability to preserve traditions and help develop the community's unique identity. "

Nutrition education strategies are often based on the assumption that changes in knowledge leads to changes in behaviour. We found no relationship between knowledge of the amount of fat in food and dietary habits. Therefore,

factors other than knowledge, such as the social value of food, traditional cuisines, taste and prices are likely to explain the dietary behaviours. This has important implications for nutrition interventions and suggests that further education about fat content is unlikely to impact greatly on dietary behaviour.

There are a number of limitations that should be considered when interpreting this data. Firstly, the data is not representative of the Samoan population in New Zealand. Participants in the study were generally older than the total population of Samoans in New Zealand from the 1991 census[19], and men were under-represented. Also, the church communities may not be representative of the wider Samoan community. Finally, both this study and the LINZ survey were cross-sectional and conducted about four years apart. However, there is no reason to believe nutrition knowledge changed dramatically during that time.

" ... factors other than knowledge, such as the social value of food, traditional cuisines, taste and prices are likely to explain the dietary behaviours. "

In conclusion, Samoans generally had good knowledge of the fat content of foods although there were some major misconceptions. Their nutrition knowledge was similar to the nutrition knowledge of other New Zealanders. Overall, eating behaviour was not consistent with current dietary goals and guidelines and several eating patterns such as low fruit and vegetable intake and not cutting fat off meat emerged as targets for education programmes.

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