

## **Dietary management of hyperlipidaemia - a survey amongst Malaysian dietitians**

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### **ABSTRACT**

Coronary Heart Disease (CHD) is recognised as an important public health problem in Malaysia. Hyperlipidaemia is one of the main risk factors related to CHD. The mainstay of treatment is diet therapy which should be maintained even if drug treatment is indicated. Since dietitians are the primary providers of dietary treatment to hyperlipidaemic patients, this retrospective study attempts to report the dietary approaches and methodologies adopted by Malaysian dietitians in managing their patients. A postal questionnaire covering various aspects of dietary management of hyperlipidaemia were sent to 47 dietitians practicing in private and government hospitals. A response rate of 53 % was elicited. The survey found that there was a disparity amongst the respondents in the approach to the dietary management of hyperlipidaemia in Malaysia. This was largely due to the absence of a standardised dietary protocol for general lipid lowering in patients with hyperlipidaemia.

### **INTRODUCTION**

In line with the lifestyle changes that Malaysians have acquired over the past 15 years, Coronary Heart Disease (CHD) has become ranked as the number one cause of medically certifiable deaths today (Khoo *et al*, 1991; Khor & Gan, 1993).

Risks strongly associated with CHD are multifactorial but elevated serum cholesterol levels (SCLs) are recognised as one of the major risks factors. Both epidemiological and scientific evidence are numerous linking elevated SCLs to CHD though the strength of the cause-and-effect relationship have not being demonstrated. What is clear now is that lowering blood cholesterol levels, in particular LDL-cholesterol, will definitely reduce the risk of heart attacks caused by CHD (National Heart, Lung and Blood Institute/ National Institute of Health, 1985). The management of hyperlipidaemia, is however, a rapidly changing field, both medically as well as nutritionally speaking.

The Consensus statement of the Ministry of Health (MOH) and the Academy of Medicine (AOM) in Malaysia (1994), states that “in the treatment of hyperlipidaemia, the mainstay of treatment is non-pharmacological measures.” Drug treatment is used only if non-pharmacological measures are inadequate or when there is severe hyperlipidaemia. The MOH/AOM Consensus supports the view that diet forms the basis of therapy for hyperlipidaemia with lipid lowering drugs as adjuncts.

That dietary treatment should be the first-line therapy for all hyperlipidaemic patients and should continue even if drugs are added to improve the lipid profile is a viewpoint shared by most Expert Groups [European Atherosclerosis Society, 1988; National Cholesterol Education Program (NCEP), 1988 & 1993; Consensus Panel (Australia), 1992]. The NCEP's Expert Panel further recommends that "maximal efforts at dietary therapy should be made before initiating drug therapy". A time frame of 6 months for dietary intervention before initiating drug treatment for a non-response has been suggested.

Clinical intervention trials such as LRC- Coronary Primary Prevention Trial (1984), MRFIT study by Dolecek et al (1986) and STARS as reported by Watts *et al* (1992) have led to recommendations for treatment and guidelines for diet therapy. Subsequently expert committees have formulated dietary recommendations for lowering blood lipids. Table 1 indicates the dietary factors that are known to influence serum cholesterol levels.

Table 1. Current dietary recommendations for general lipid lowering

Dietary Factor	NCEP (USA) <sup>1</sup>	EAS (Europe) <sup>2</sup>	NHF (Aust) <sup>3</sup>	MOH/AOM (M'sia) <sup>4</sup>
CHO (% energy)	55 or more	55	> 55	—
CHO type	—	—	complex	Complex
Protein (% energy)	15	10-15	10-15	—
Fat (% energy)	30 or less	up to 30	no > 30	<30
SFA (% energy)	8-10	10	<10	avoid
PUFA (% energy)	up to 10	10	<10	} 1 not >2tb
MUFA (% energy)	up to 15	10	<10	1 day <sup>-1</sup>
Cholesterol (mg day <sup>-1</sup> )	<300	<300	<300	<300
Fibre (g day <sup>-1</sup> )	—	35	increase	20-25
if SCLs response is inadequate to standard diet...	Step II: SFA < 7% en Cholesterol < 200 mg day <sup>-1</sup>	Fat 20-25% en Cholesterol < 150 mg day <sup>-1</sup>	restrict fat more	—

NCEP<sup>1</sup> — National Cholesterol Education Program, 1988 & 1993

EAS<sup>2</sup> — European Arteriosclerosis Society, 1988

NHF<sup>3</sup> — National Heart Foundation, Australia, 1992

MOF/AOM<sup>4</sup> — Ministry of Health / Academy of Medicine, Malaysia, 1994

In the clinical setting, the dietitian is part of a multidisciplinary team. The dietitian's role in therapy is to seek to lower lipid levels and mortality due to CHD. Dietitians as healthcare professionals are best placed to translate medical consensus on dietary management of hyperlipidaemia into appropriate diet prescriptions, provide meaningful information for the patient and teach the patient ways to implement dietary changes so as to lower SCLs.

The questions now are how effective can diet therapy be in lowering SCLs and how effective can dietitians be in modulating effective diet therapy to lower SCLs? The current trend is towards diet audits to answer these questions (Evans *et al*, 1990; Le Cornu, 1991). With the current issue of cost-consciousness of health care delivery in Malaysia, quality assurance is emerging as a management tool. Data documenting dietitian-delivered therapy has not previously been reported

in Malaysia. It is therefore, the objective of this retrospective study to collect information on the dietary management of hyperlipidaemia by dietitians in the Malaysian context.

## **METHODS**

The research design was a mail survey of all qualified dietitians working in private and public hospitals in Malaysia. The study population were identified through membership lists of the Malaysian Dietitians' Association (MDA) which has 56 registered members. Additionally those dietitians who were not members of the MDA, were also identified. This latter group comprised four nutritionists who were practicing as dietitians. A total of 47 questionnaires were sent out to dietetic practitioners selected under the criterion of carrying out clinical practice.

A 47-itemed questionnaire on the dietary management of hyperlipidaemia was used. Multiple-choice and open-ended questions were asked. The questionnaire was based on a survey format reported by Munro *et al*, (1995). These questions covered background information of dietitians and their workplace, dietary assessment techniques used, tools used for measuring dietary compliance and patient database kept. Dietitians were also asked to express personal opinions pertaining to constraints in dietetic practice. The questionnaire was pretested outside the sampling frame, prior to a final draft and distribution.

All questionnaires were mailed with stamped self-addressed envelopes and a covering letter explaining the questionnaire's objectives and assuring anonymity.

### **Statistical Analyses**

Frequency distribution analyses were employed for all questionnaire items.

## **RESULTS AND DISCUSSION**

### **Response Rate**

Out of 47 questionnaires mailed, 26 were returned, of which 25 were completely filled giving a response rate of 53%. In the Malaysian situation, there are no diet clinics specific to treating hyperlipidaemia; and treatment mostly forms a part of outpatient counselling. The nature of work for dietitians, ranges between administrative, clinical, consultative and catering and this somewhat explained the poor response rate.

### **Background of dietitians**

Table 2 shows selected background information of the dietitians. The majority of the dietitians were females (92%), worked in government hospitals (60%) and held relevant qualifications in dietetics at basic (60%) and postbasic levels (20%). Sixteen percent of the dietitians were found to hold nutrition degrees without relevant dietetic qualifications.

Forty-four percent of the dietitians graduated locally, 52% qualified overseas whilst 2% of the dietitians obtained mixed training (local and overseas). Postbasic training in dietetics was obtained overseas and included postgraduate diploma (n=4) as well as masters degree (n=1) holders. Only 2 dietitians reported holding professional registered dietitians status and these were with overseas bodies.

In terms of work experience, the group mean is 9.9 years with 21 % of the dietitians having more than 15 years of work experience; 33% between 5 to 10 years and 12.5% with 2 years or less.

Table 2. Background of Dietitians (n = 25)

		n	%
Workplace	Government	15	60
	Private	5	20
	Semi-government	2	8
	Universities	2	8
Sex	Male	2	8
	Female	23	92
Qualifications Dietetics	Basic	15	60
	Post basic	5	20
	Nutrition	4	16

### Overview of Outpatients' Dietary Services

The dietitians (n=25) spend on average 3 hours per day 4 days a week in direct patient contact. They attend to an average 6 new and 5 repeat cases of hyperlipidaemia patients per week. Only referred hyperlipidaemia patients are given dietary treatment. The length of time expended in consultation with new patients ranged between 20 to 90 minutes (mean, 43.5 min.) whilst for repeat patients this ranged between 10 to 45 minutes (mean, 21 min.). A similar study in Australia (Munro *et al*, 1995), reported a range of between 5 to 30 minutes for initial assessment while dietary assessment at follow-up took between 5 to 20 minutes.

### Patient Database Maintained

Table 3 shows the information maintained by the dietitians as patient database. Only 81% of dietitians maintained patient database. Database were kept in the form of appointment books (n=2), patient records (n=11) or both (n=8) and none maintained any computer database. On the whole, most dietitians retained information on the identity of the patient, weight and height measurements, diagnosis of the disease and recommended diet given.

Without adequate technique to document adherence and level of nutrient intake, efforts to promote effective dietary interventions are severely handicapped. Results revealed that insufficient patient data is maintained by the dietitians. For instance, an expert group [Consensus Panel (Australia), 1992] suggests that 'the success of dietary therapy should be assessed and monitored not only by lipid values, but also by fatness reduction (particularly abdominal area)

and level of dietary change actually achieved'. In this context, perhaps the waist-hip ratio measurement should not be overlooked as a cheap, useful and effective monitoring tool.

In addition, what is being overlooked by the dietitians in this reported survey, is the use of computer software for facilitating database maintenance. An obvious potential for an efficient database system is for dietitians to conduct research. The average frequency and duration of intervention sessions needed to achieve successful outcome can be documented, that is, dietary adherence and lowering of LDL-C/triglyceride levels.

**Table 3.** Patient information maintained

Items		Responses	
		n	%
Personal particulars	Identity	14	56
	Race	2	8
	Socioeconomic status	3	12
Anthropometric data	Weight & Height	8	32
	BMI	3	12
	Weight	1	4
	Waist/Hip ratio	0	0
	Skinfold measurements	0	0
Medical notes	Family history	2	8
	Drugs	1	4
	Diagnosis	4	16
Physical Activity Patterns		1	4
Dietary History		5	20
Recommended Diets		15	60
Follow up	Weight & lipid changes	1	4
	Overall management	1	4

**Table 4.** Dietary methods used for monitoring hyperlipidaemic patients

Method	First visit		Follow-up	
	n	%	n	%
Diet History	18	72	11	44
FFQs.	10	40	10	40
Food Diary	3	12	8	32
24-hour Diet Recall	12	48	11	44
Food Habits*	13	52	5	20
Food rating Score	1	4	2	8

\*Questionnaire

## Patient Management Dietary Assessment

Dietitians need to measure objectively whether or not a patient's diet complies with recommendations quantitatively. Table 4 shows that diet history, food habits, 24-hour recall and food frequency questionnaires (FFQs) were the most commonly used methods of dietary assessment among the dietitians for initial visits; whilst diet history, 24 hour recall, FFQs and food diaries were more commonly used for follow-up sessions.

Overall about 62% of the dietitians used more than two methods of dietary assessment for the initial visit of the patient whilst 47 % continued the same practice for subsequent follow-ups.

Dietary assessment methodology for both initial and follow-up consultations presents a challenge to dietitians who have limited time and resources. The diet history by Burke [1947] is a detailed interview measuring an individual's average dietary intake using a ranked scale. Various modifications exist today to quantitate dietary intakes more precisely.

The seven-day diet history by Le Cornu [1991] is the most applicable to the clinical setting. Chima [1990] has used a combination of methods namely, a diet history and a 3-day food diary. Connor *et al* in 1992, developed a 32-itemed diet habit questionnaire format that relates to plasma cholesterol changes. They estimated that it took subjects 30 minutes to complete and 5 minutes for trained dietitians to review and score.

Food frequency questionnaires (FFQs) have been used for dietary assessment by several dietitians, although the use of such information from the method is unclear. Curtis *et al* [1992] have described a food frequency questionnaire appropriate for use in a clinical setting to measure rapidly and accurately the total dietary fat, saturated fat and cholesterol intake of an individual. The FFQ method could be useful as a screening tool providing a quantitative assessment of dietary intake, despite limited resources and time, two limitations which are relevant in our survey of dietary management of hyperlipidaemia in Malaysia. This method is reported to be capable of providing dietary information in the format in which the dietary recommendations for treatment of hyperlipidaemia are presented. Willett *et al* [1987] have validated a semi-quantitative FFQ that could be adapted to the local clinical situation. However, FFQs must be specifically designed to suit the local situation and must be validated before its use as a standard protocol.

The 24-hour Recall is commonly used in clinical settings. Accuracy of information derived from this method has been questioned when applied for assessing usual intake for an individual due to large intra-individual variation of nutrient intake. Repeated 24-hour recalls over an extended period are required for validity. Although the use of this method is attractive in a clinical setting where there is limited time and resources, information derived from a single 24-hour recall is unreliable and of little assistance in deciding appropriate treatment for hyperlipidaemia.

Overall, for a lipid clinic, a dietary assessment tool that identifies current eating behaviours and provides a means for tracking behavioural changes made over time would be useful. Additionally, choice of a tool for dietary assessment should also be influenced by cost and ease of administering.

Table 5 indicates the nature of information sought by dietitians. The major dietary information sought by the majority of the dietitians were total energy (88%), cholesterol (88%), saturated fat (84%), macronutrient amounts (80%), and fiber intake (72%). However, only 40% of the dietitians looked at macronutrients as percentage energy.

Table 5. Nutritional information sought from dietary assessment by respondents

Items	n	% Response
Total Energy	22	88
Macronutrients (fat, CHOs & protein)	20	80
Macronutrients as % Energy	10	40
Fibre	18	72
Cholesterol	22	88
Saturated fat	21	84
Monounsaturated fat	14	56
Polyunsaturated fat	15	60
Others	3	12

Most dietitians surveyed depended more on seeking qualitative rather than quantitative data. This may be due to a constraint on time for patient assessment (refer Overview of Outpatients' Dietary Services) as well as a lack of a comprehensive nutritional database for deriving quantitative information as ideally desired by dietary recommendations (percentage energy from fat, P:M:S ratio, soluble fibre, etc.). A comprehensive nutrient database should be wide enough to include foods commonly eaten by the various ethnic groups in Malaysia, and at the same time include foods (raw or cooked) such as fish or coconut milk that will markedly alter the fatty acid profile of foods consumed.

The recently updated Malaysian Food Composition Table (Tee *et al*, 1997) has included new data on the fatty acid profile and cholesterol content of local foods. This database is however restricted to 95 raw foods items for their cholesterol content, 21 raw foods for their fatty acid profile and 23 ready-to-eat foods for both their cholesterol and fatty acid content. As a source of quantitative information more work is needed to expand the nutrient database and continually update information to reflect current dietary consumption patterns as well as ethnicity.

### **Dietary Recommendations**

Table 6 indicates the various levels of diet modifications recommended by the dietitians. Even though 80% of dietitians recommended the restriction of energy derived from fat, only 52% of dietitians indicated dietary modifications in the type of fat to be recommended. Other major dietary recommendations were cholesterol and carbohydrate type. Specific amounts of fiber were recommended by only 52% of the respondents.

The information recommended by the dietitians indicates the absence of any standardised dietary protocol. It is interesting to note that 53% of dietitians followed established dietary guidelines for the treatment of hyperlipidaemia whilst the remaining did not follow any specific guidelines. Guidelines followed by dietitians are those established by the American Heart Association (57%) and various derivations of guidelines given by the British, American and Australian Dietetic

Associations' (29%). The survey found that quantitative advice is given by some and not all the dietitians.

Surprisingly, only one dietitian referred to the guidelines of the Consensus Statement on Management of Hyperlipidaemia set out by the MOH/AOM, Malaysia (1994).

Table 6. Diet principles recommended for hyperlipidaemia management

Items	n	% Response	Ranges recommended
Total Energy (kcal/kg) - underweight	15	60	30-50
- normal weight			30-40
- overweight			20-30
Fat (% energy)	20	80	<30 to 35
Saturated fat (% energy)	13	52	7 to 10
Monounsaturated fat (% energy)	12	48	10 to 15
Polyunsaturated fat (% energy)	12	48	10
Cholesterol (mg)	19	76	200- 300
Carbohydrate (% energy)	18	72	50-60
Carbohydrate type	19	76	complex
Fibre (g)	13	52	15 to 60

### Patient education about food choices

Patient education about food choices is summarised in Table 7. No clear agreement seems to exist amongst the dietitians surveyed. The dietitians emphasized various preparation methods to reduce fat content of the overall diet. In response to the use of coconut and its products, majority of the dietitians' advice (64%) given was to 'avoid'. Response was poor in terms of the background fat in the diet; 28% recommended the use of palm oil and 28% recommended reduction in the total cooking oil used.

Effectiveness of diet recommendations depends on methods adopted by dietitians in translating diet advice to patients. Patient education as in all spheres of medical care, is an area of dietetic service that needs to follow established protocol. In the absence of such protocol the dietitians surveyed, seemed confused as to the role of food and the choice of fats to be recommended.

### Monitoring Parameters

Successful outcome is often interpreted as dietary adherence and lowering of LDL-C/triglyceride levels. Table 8 shows that majority of dietitians (84%) used changes in body weight and serum lipid profiles to assess patient compliance whilst 80% of dietitians used changes in dietary intake and food habits as an evaluating tool.

Relying solely on lipid levels as a measure of dietary compliance is insufficient as substantial intra-individual variability in lipid levels exist. Further, not all people respond similarly to a traditional lipid-lowering diet [Samman, 1991]. The current emphasis in effective dietetic treatment is for gradual dietary change (a shift over time for recommended dietary changes) as well as using self-monitoring tools. Self-monitoring is the process of observing and recording

one's behaviour to improve adherence to a dietary regimen. This process helps patients internalise eating guidelines, solve food selection problems, and improve dietary goal setting [Dwyer, 1989]. The resultant awareness is a first step in changing behaviours, teaching self-reliance and achieving self-efficacy [Snetselaar, 1989]. Ultimately patients develop self-efficacy - the belief in their ability to adopt and maintain a healthful diet which as Bandura [1977] stresses is the cornerstone to effective health outcomes. Mitchell *et al* (1996) have developed and validated a cholesterol-saturated fat index (CSI) scorecard which is in a dietary self-monitoring tool format.

Table 7. Advice given to Dietitians to patients about food choices

Items	% Response
<b>Use of household measures</b>	44
<b>Preparation methods</b>	
low fat cooking techniques	72
modified recipes	8
non-stick cookware	12
reduce oil	32
reduce coconut milk	8
reduce saturated fat sources	8
trim visible fat	40
remove skin off poultry	16
skim fat off gravies & soups	16
<b>Coconut &amp; its products</b>	
avoid	64
substitute skim/low fat milk	44
allowed	4
dilute or reduce	36
use occasionally	28
avoid gravy when eating out	8
<b>Cooking oil (recommended)</b>	
palm oil	28
blended oils	12
all vegetable oils	24
corn oil	12
soya bean oil	4
peanut oil	4
reduce total amount	28
<b>Cooking Oil (to avoid)</b>	
coconut oil	12
saturated fat	16
olive oil	8

Table 8. Assessing patient compliance

	n=25	%
Changes in dietary intake & food habits	20	80
Body weight changes	21	84
Waist/Hip ratio changes	5	20
Skinfold measurements	3	
Serum lipid profile	21	84

Waist-hip ratios and skinfold measurements in contrast are not valued as important tools by most dietitians. As mentioned earlier fatness reduction (particularly abdominal) are also important measures of effective dietary therapy [Consensus Panel (Australia), 1992].

An effective interdisciplinary approach for the management of hyperlipidaemia requires a standard protocol and time frame for evaluating lipid lowering. Ideally, the Consensus Panel (Australia) [1992] suggests that during initial stabilisation, patients need to be followed up every 2 to 3 months. Once the blood lipids levels are stabilised, patients should be monitored and blood lipid measurements repeated every 6 months.

Table 9 expresses dietitians' response in using serum lipid profile (SLP) tests as monitoring tools; 32% of dietitians expressed some difficulty in obtaining results due to delays in awaiting doctors' decisions or laboratory reports or simply because testing procedures were not part of the policy. The policy for requesting SLP tests remained with doctors (87.5%) with requests in some cases initiated by dietitians (17%) and patients themselves (42%). Forty-seven percent of hyperlipidaemic patients had relevant SLP tests available when visiting the dietitian with 53% of them testing once every 6 months and 47 % once every 3 months.

Table 9. Responses expressed by dietitians in obtaining Serum Lipid Profiles (SLP)

Items	Responses	
	n	%
<b>Availability of SLP tests (n = 22)</b>		
Difficulty obtaining SLPs	7	32
No difficulty	14	64
Not done	1	5
<b>Frequency of SLPs tested: (n = 25)</b>		
Had latest result for patient visit	10	40
Tested every 3 months	8	32
Tested every 6 months	8	32
<b>Who orders SLP tests? (n = 25)</b>		
Doctor only	22	88
Dietitian only	4	16
Dietitian + Doctor	11	44
Patient's Initiative	11	44

## **Personal Opinions**

Twenty-two out of 25 dietitians expressed constraints and limitations in dietary management. An important opinion commonly expressed by the dietitians in the survey (65%) was that doctors did not adequately pursue dietary treatment of hyperlipidaemia before initiating drug therapy. Such sentiments have been similarly reported by Yetiv & Del Tredici (1986) in their survey of United States physicians. The physicians' perception was that diet therapy is often unsuccessful in helping their patients adopt lipid-lowering diets. Major factors cited as impeding successful diet therapy were lack of time, lack of office staff with nutrition training and financial abilities of patients. Only 58% of these physicians were willing to provide dietary counseling whilst only 15% felt confident in their ability to help patients achieve diet changes to lower SCLs.

Other expressed reasons for suboptimal dietary intervention were:

- ❑ shortage of dietitians (44%) - causing increased work load, time constraints, group counselling techniques instead of one to one therapy for first consultations, poor follow-up, mixed job functions instead of specializations
- ❑ poor staff support (36%) - management support and doctors' referrals
- ❑ patient attitudes (20%) - not keeping appointments, poor compliance, ignorance of role of diet therapy, additional cost for seeking diet therapy
- ❑ the absence of standard dietary protocols (32%) based on dietary guidelines for treatment of hyperlipidaemia.
- ❑ lack of education materials for patients (24%)
- ❑ public ignorance of role of diet therapy (40%)
- ❑ poor professional image (28%)
- ❑ lack of cooperation and networking amongst dietetic fraternity (12%)
- ❑ lack of Continuing Professional Education and other training schemes (20%)

Suggestions put forward by respondents in the survey to improve dietary intervention of hyperlipidaemia were:

- ❑ developing better dietary protocols
- ❑ focusing more time to clinical duties and reducing catering functions
- ❑ raising professional image through media exposure and also with doctors
- ❑ developing short-course training programmes aimed at skills development and updating knowledge
- ❑ need for regulation by a professional body
- ❑ introducing fees for dietetic services

## **CONCLUSIONS**

The nature of the study design has some limitations in terms of the population size of dietitians in Malaysia and the response rate; however issues perceived as barriers to effective management of hyperlipidaemia patients were identified. Lack of dietary intervention, either self-initiated or

initiated by health professionals combined with limited adherence, is a notable problem that dietitians are ideally qualified to address. For dietitians, there is now an urgency for:

- a dietary protocol standard for the management of hyperlipidaemia patients
- Continuing Professional Education programmes for dietitians to strengthen self-efficacy
- feedback on the effect of nutritional counseling to improve perceived outcome efficacy
- restructuring work to allow for increased clinical practice and better use of dietitians

With the advent of health care reform in Malaysia and emphasis on preventive health care, policy makers and the medical profession should support nutrition therapy as an effective and low-cost alternative in the treatment of patients presenting with mild and moderate hyperlipidaemia.

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