Prevalence of Coronary Risk Factors in a Sample of Chinese Women in Kuala Lumpur

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Summary

Several risk factors for cardiovascular disease amongst a sample of urban Chinese women were investigated. These factors included body mass index (BMI), waist hip ratio, total blood cholesterol (TC), HDL-cholesterol and Lp(a) levels, blood pressure, cigarette smoking, family history of chronic disease, dietary habits and frequency of selected food intake. The subjects were found to have coronary risks with respect to BMI and TC level, both of which increased with age of the women. Hypertension, HDL-cholesterol and Lp(a) levels appeared not to pose as risk factors amongst these subjects. Dietary habits and intake showed significant correlations with subjects' BMI status. Health promotion is called for towards reducing the modifiable coronary risk factors. ·

Key Words/phrases: Coronary risk factors, Urban chinese women

Introduction

Several factors that increase the risk of coronary heart disease are now well established based on extensive clinical and epidemiological studies[1,2]. While some risk factors such as heredity, male sex, and increasing age cannot be changed, there are others that are amenable to change or control. The latter include cigarette smoking, hypercholesterolemia, hypertension, diabetes mellitus, obesity, stress and diet. The effects of diet including total calories, fat and cholesterol content, carotenoids, vitamins A, C and E on cardiovascular disease have been extensively studied and reviewed[3,4,5].

In Malaysia, diseases of the circulatory system have been the leading cause of mortality (among cases which are medically certified and inspected) since the early 1970's. Coronary heart disease constitutes the major cause of death in this category. In 1994, coronary heart disease constituted 37.4% of all mortality from diseases of the circulatory system[6]. Although the mortality rate due to coronary heart disease is more than twice as high in men (29.5 per 100,000 in 1994) than in women (14.5), it is noteworthy that the mortality rate

for women has risen by 2.4 times since 1975, compared to 1.4 times for men over the same period[7]. This could indicate, in part, that more women are seeking medical attention which, in turn, may reflect increased awareness and accessibility to medical care in this rapidly developing country.

Coronary heart disease (CHD) has traditionally been perceived as affecting mainly men and thus, intervention trials and strategies have concentrated on males. However, there is growing concern that CHD is a leading cause of female mortality in the United States, United Kingdom and elsewhere. According to the American Heart Association ischaemic heart disease is the single largest cause of death among women in the United States[8]. In 1992, the age-adjusted death rate per 100,000 population for cardiovascular disease was approximately 480,000 for women compared with 445,000 for men in the United States. This gender difference in mortality is over 35,000 per year currently.

In Malaysia, previous studies on the risk factors of coronary heart disease have tended to focus on male

subjects. These studies[9,10,11,12] have reported on the prevalence of hypercholesterolemia, cigarette smoking, overweight, hypertension and diabetes among Malay, Chinese and Indian men. There are relatively fewer investigations on the coronary risk factors in Malaysian women, with the exception of some studies on obesity. In the study by Jones[13] on adult obesity in Kuala Lumpur, he reported that, among the women subjects, Indian women showed the highest prevalence of overweight, (as defined by body mass index equal to and greater than 25.0). The same study found that the age groups of 31-40 years and 41-50 years had the highest prevalence of overweight women, regardless of ethnicity. Arshad et al[14] also reported a high prevalence of overweight (39.3%) among Malay women from Kuala Lumpur. The study by Ismail et al[15] on 2,111 women from various urban areas in Malaysia reported that, on the average, 26.0% of the women were overweight. The highest prevalence of overweight women was among the Indian subjects (46.9%) followed by Malays (28.4%) and Chinese (17.2%). It appears that the problem of obesity particularly among urban women is emerging as a public health concern.

With the exception of obesity, there is a dearth of data on the prevalence of the other risk factors to coronary heart disease in Malaysian women. In recent decades, the country has been undergoing rapid economic development which brings about in its wake changes in the lifestyles of the people. These lifestyle changes include changes in dietary patterns. Data from food balance sheets indicate that, since the 1960's, the per capita availability of total calories and calories from fats have increased, while that for calories from carbohydrate foods, such as cereals and starchy roots has declined[16,17] Changes in dietary practices, including frequency of eating out, are also influenced by socio-economic factors such as increased affluence and more households with both spouses working outside the home.

In view of these lifestyle and dietary changes affecting urban Malaysians, a research project was undertaken in 1994/95 to study the relationship between diet and health among urban Chinese subjects. The project was a collaborative effort between Monash University, Australia, Universiti Putra Malaysia and the Palm Oil Research Institute of Malaysia. This article discusses the prevalence of several coronary risk factors in a

sample of Chinese women in Kuala Lumpur. The relationships between these risk factors with dietary practices, health-related habits, medical history and health status, day-to-day activities and social interactions with relatives and friends are also discussed.

Methods

The township of Seri Kembangan located about 15 kilometers from Kuala Lumpur was chosen for the study due to its predominance of Chinese residents. The town has undergone substantial development in tandem with the rapid economic development taking place in the country. The population of Seri Kembangan and the neighbouring residential areas is estimated to be 150,000. Approximately 500 houses located around the town center served as the sampling frame. Leaflets explaining the study were distributed to all these houses prior to the commencement of the household interview. Enumerators were recruited who could conduct interviews in Mandarin, Hakka or Cantonese, the latter two being the main dialects of the Chinese in Seri Kembangan. A structured questionnaire was used and it included questions on the socio-economic characteristics and food habits of the respondents. Only one adult from each house aged between 20 to 65 years, who agreed to be interviewed was included. It is realized that, in this way, there could be a bias towards including more subjects who were more active and more health conscious. Nonetheless, this approach was used in light of past research experience where it was not easy to obtain the cooperation of urban subjects.

Besides the questionnaire interview, this study also included anthropometric measurements, biochemical tests on blood samples, clinical examination and measurement of blood pressure. All these assessments were carried out on two Sundays at the Community Center of Seri Kembangan, located in the central part of the town, so that it was convenient for the respondents to attend. Circulars encouraging the respondents to be present for the nutritional assessment were given during the interview.

Frequency of food intake and food habits

Food intake was assessed using the Melbourne Chinese Health Study Food Frequency questionnaire (MCHS-

FFQ), which had been validated for use among Melbourne Chinese[18]. In the present study, the MCHS-FFQ list of food items was modified slightly by substituting less frequently consumed items with those that are more often consumed by Malaysian Chinese. The respondents were asked to estimate the frequency of intake of each type of food and beverage on the basis of per day, per week or per month. The usual amount of intake was also recorded with reference to household measures such as the Chinese rice bowl, cups and spoons. Questions pertaining to food habits included frequency of eating out and eating take-away food and the use of sugar and salt in meals.

Anthropometric measurements

The subjects were measured for body weight, height, waist and hip circumferences. Body weight was measured by means of a sturdy digital weighing scale (TANITA) with an accuracy of 0.5 kg. For each subject, an amount of 0.5 kg was deducted from the body weight to exclude the weight of clothing. Height was measured by means of a microtoise tape suspended upright against a straight wall. The criteria for the classification of nutritional status based on anthropometric measurements are according to the recommendations of WHO[19].
Body mass index or BMI = weight (kg)/height (meter^2):

< 18.5	:	thin
18.5 - 24.9	:	normal
25.0 - 29.9	:	overweight
≥ 30.0	:	obese

Waist circumference at the umblicus was taken using a non-stretchable fibre-glass tape, while the hip circumference was taken at the widest circumference of the buttocks. Waist hip ratio (WHR) status:
> 0.85 for females: indicative of abdominal or central obesity

Biochemical analyses

Non-fasting blood samples for lipid analysis were taken by a physician. About 5 mls of blood was taken from each respondent for the determination of total cholesterol, high density lipoprotein cholesterol (HDL-C) and lipoprotein Lp(a). Each blood sample was allowed to clot at room temperature for two hours, after which it was centrifuged at 3,000 rpm. The clear serum was divided into three aliquots of 500 μl, 500

μl and 1500 μl. Prior to the lipid analysis, the serum samples were stored in Eppendorf tubes at -20°C. The lipid analyses were carried out in the Nutrition Laboratory of Palm Oil Research Institute of Malaysia (PORIM), according to the method described by Sundram, Hayes and Siru[20].

Blood cholesterol status as recommended by NCEP[21]:

5.2 - 6.2 mmol/l	borderline high total cholesterol (TC)
> 6.2 mmol/L	high TC
< 0.9 mmol/L	low HDL-cholesterol
> 35 mg/dl	high Lp(a)

Clinical examination

Among the examinations carried out by the attending physician were measurements of the systolic and diastolic blood pressure. The physician also interviewed the respondents about their current health status and family history of chronic diseases. High blood pressure as defined by:
Systolic blood pressure ≥160 mm Hg and/or diastolic blood pressure > 95 mm Hg

Results and Discussions

A total of 331 subjects were interviewed for the study, out of whom 187 were female and 141 male. Of the 187 women interviewed, 103 came to the community centre for the nutritional assessment. Only 40 of the male subjects came for the nutritional assessment. When asked subsequently of the reasons for not coming for the assessment, the most common reason given by the women was that they were too busy with household chores or business matters, whilst that given by the men was that they were not sick and, therefore, felt that they did not need to be examined by a physician. Due to the disproportionately few male subjects available for the nutritional assessment, this report discusses the result of the nutritional assessment of the female subjects only.

Distribution of coronary risk factors by age (Table I)

The mean age of the women subjects was 40.0 years with a range from 25 to 62 years. It is known that the CHD morbidity and mortality rates increase with age in both sexes. According to the American Heart

Association, out of about 20,000 females under 65 years who die of ischaemic heart disease annually, nearly 31% are below 55[8]. In the Framingham Study, a 10-fold increase in CHD occurred when women aged 35-54 years were compared to those 55 years or older, whereas over the same age span, the increased risk for men was only 4.6 times[22].

Body mass index and waist hip ratio

The subjects had a mean body weight and height of 58.1 kg and 152.7 cm respectively. The BMI values of these women ranged from 21.0 to 27.0 kg/m^2 with a mean value of 24.3 kg/m^2. Thus, on the average, the BMI of these women bordered on being overweight. A total of 29.1% of these women could be classified as overweight while another 7.8% as being obese.

There was a higher proportion (67%) of the subjects with acceptable BMI levels in the younger age category of 25 - 40 than among subjects above 40 years (51%). In contrast, the proportion of overweight and obese

Table I
Distribution of coronary risk factors by age among subjects

	Age (years) 25-40 (N = 52)	41-62 (N = 51)	All ages 25-62 (N = 103)
	n (%)	n (%)	n (%)
Body mass index (kg/m^2)			
< 18.5	3 (5.8)	1 (2.0)	4 (3.9)
18.5 – 24.9	35 (67.3)	26 (51.0)	61 (59.2)
25.0 – 29.9	10 (19.2)	20 (39.2)	30 (29.1)
≥30.0	4 (7.7)	4 (7.8)	8 (7.8)
Waist hip ratio			
≤ 0.85	50 (96.2)	43 (84.3)	93 (90.3)
> 0.85	2 (3.8)	8 (15.7)	10 (9.7)
Total cholesterol (mmol/L)			
< 5.2	27 (51.9)	11 (21.6)	38 (36.9)
5.2 – 6.2	13 (25.0)	17 (33.3)	30 (29.1)
> 6.2	12 (23.1)	23 (45.1)	35 (34.0)
HDL-cholesterol (mmol/L)			
< 0.9	5 (9.4)	2 (4.0)	7 (6.8)
≥ 0.9	48 (90.6)	48 (96.0)	96 (93.2)
Lipoprotein(a) (mg/dl)	(N=41)	(N=35)	(N=76)
≤ 35	40 (97.6)	31 (88.6)	71 (93.4)
> 35	1 (2.4)	4 (11.4)	5 (6.6)
Systolic BP (mm Hg)			
< 160	52 (100.0)	49 (96.1)	101 (98.1)
≥ 160	0	2 (3.9)	2 (1.9)
Diastolic BP (mm Hg)			
≤ 95	52 (100.0)	47 (92.2)	99 (96.1)
> 95	0	4 (7.8)	4 (3.9)

subjects was higher (47%) in the 41 - 62 age category compared with 26.9% in the 25 - 40 years old group. There was a small percentage (3.9%) amongst the subjects who were thin (BMI <18.5 kg/m²) and most of them are in the younger age category.

In the Nurses' Health Study[23] involving over 15,000 women aged 30 - 55 years, it was reported that BMI was more strongly associated with deaths due to CHD and other cardiovascular diseases than with deaths due to other causes. Recent studies have shown a strong association between excessive accumulation of fat in the abdominal region with metabolic alterations such as hyperinsulinaemia and disturbed plasma lipoprotein profile[24].

In this study, the subjects were found to have a mean WHR of 0.79 indicating that, on average, they were not centrally obese. A higher percentage (15.7%) of the women in the older age category (above 41 years) showed central obesity with WHR exceeding 0.85, compared with the younger subjects (3.8%). Thus, both BMI and WHR indicators showed that these female subjects aged above 40 years were at a higher risk of coronary heart disease.

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Total blood cholesterol (TC)

Plasma lipids analysis showed that the women subjects had a mean total serum cholesterol (TC) level of 5.79 mmol/L. This level places the subjects in the borderline high TC category. A total of 34% of the women showed high TC levels (exceeding 6.2 mmol/L). The range for the TC levels of these subjects varied from 3.16 to 9.25 mmol/L.

Overall for all ages, 36.9% of the subjects had acceptable TC levels of below 5.2 mmol/L. A higher percentage (45.1%) of the older subjects had high TC levels compared with the younger group (23.1%). Among subjects aged above 40 years, 78.4% were at either at borderline high risk or high risk to coronary

heart disease. In the younger age group, there was also a fairly high percentage amongst them who were at borderline high risk (25.0%) or high risk (23.1%). By this indicator, it is seen that hypercholesterolemia prevail in all ages with a higher proportion in those above 40 years.

HDL-cholesterol

The average value for HDL-cholesterol of the women was 1.32 mmol/L, which is higher than the recommended minimum level of 0.9 mmol/L. The majority of the subjects (93.2%) had acceptable HDL-cholesterol levels (exceeding 0.9 mmol/L). The proportion of subjects with acceptable HDL-cholesterol values is about similar in both the younger and older age categories.

Lp(a)

The mean value for Lp(a) of the subjects was 11.29 mg/dl. Most of the subjects (93.4%) had Lp(a) levels that were below 35.0 mg/dl. While 11.4% among the older women had Lp(a) levels exceeding 35.0 mg/dl, only 2.4% among the younger age group exceeded this level.

Lp(a) is essentially an LDL particle which has been shown to be an independent risk factor of atherosclerosis and coronary heart disease. Factors such as age, gender, smoking, hypertension, total LDL- and HDL-cholesterol levels are not thought to affect Lp(a) concentrations. Nonetheless, other genetic conditions may have an effect since patients heterozygous for familial hypercholesterolemia have double the plasma concentration of Lp(a)[25].

In a study involving seven ethnic groups[26], it was reported that the average Lp(a) concentrations were significantly different among these groups, with the Chinese (7.0 mg/dl) having the lowest and the Sudanese (46 mg/dl) the highest mean levels. Thus, the average Lp(a) level of the subjects in this study appears comparatively low.

Family history of chronic disease

The majority of the subjects reported that they did not have diabetes mellitus, hypertension or heart disease in general. Nonetheless, almost one-third

indicated that at least one close family member suffered from or had died of one or more of those three chronic diseases. Six subjects (5.8%) reported having diabetes mellitus or hypertension or both at the time of the study. Three subjects (2.9%) had one of those chronic diseases as well as having a family history of chronic disease.

Blood pressure

The average systolic and diastolic blood pressure values of the subjects were 137.5 and 90.8 mm Hg respectively. A small proportion (5.8%) of the subjects had high blood pressure, but none of the subjects below 40 years had high blood pressure. All the six subjects who were hypertensive were in the older age category.

High blood pressure is well documented as an increased risk of CHD[27]. In the Nurses' Health Study[23], women with high blood pressure had 3.6 times the risk of CHD compared with non-hypertensive women of the same age. Several long-term studies in the United States such as the Framingham Study, the NHANES-I and the Chicago Heart Association Detection Project in Industry, as described in Stamler, Stamler and Neaton[23], have reported that elevated blood pressure measured at baseline was significantly related to higher risks of CHD death among older women aged above 60 years.

Smoking

Only one subject reported being a current smoker while the rest never smoked. Smoking is an independent risk factor in women with a dose-response relationship[29]. The prevalence of smoking in Malaysia is not well documented. It is estimated that the smoking prevalence among the women is low, probably below 15%. In a study involving 1,006 women admitted to the coronary care unit of General Hospital in Kuala Lumpur[30], it was reported that 23.9% were current smokers compared with 12.8% among controls. A dose-response pattern of increased acute myocardial infarction risks among the women smokers was found.

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[1]"Dietary Practices in Nutritional Transition: the Case of Malaysian Urban Chinese" being published in the *Ecology of Food and Nutrition.*

Percentage frequency of subjects with risk factors

Of the four coronary risk factors reported namely, hypercholesteromia, obesity, hypertension and family history of chronic diseases including heart disease, 44 (42.7%) of the subjects had one risk factor, while another 19.2% had two (Table II). Just over one third (35%) did not have any risk factors. The present results indicate a substantial proportion of the Chinese women have at least one coronary risk factor. In comparison, Teo, Chong and Zaini[11] reported that 35.2% out of 182 Chinese male executives in Kuala Lumpur had at least one of these three risk factors namely, hypercholesterolemia, hypertension and smoking. Another 9.3% of those men had two of such risk factors.

Correlation between BMI/WHR with biological parameters

Hypercholesterolemia, hypertension and diabetes are known to be associated with obesity. They manifest as intermediate steps in the causal pathway linking obesity to increased mortality due to cardiovascular disease[23]. Clinical data have long suggested a link between obesity and several chronic illnesses. The results from NHANES-II conducted on representative populations in United States from 1976 through 1980 showed that (a) the prevalence of hypertension (blood pressure >160/90 mm Hg) is 2.9 times higher for the overweight than for the non-overweight; (b) the prevalence of hypercholesterolemia (blood cholesterol >250 mg/dl) in the overweight below age 45 is 2.1 times that of non-overweight subjects of the same age group; and (c) the prevalence of diabetes is 2.9 times higher in overweight than non-overweight persons[31].

In this study, BMI was found to have a significant and positive correlation with total serum cholesterol (Table III). The relationship between BMI and HDL-cholesterol was inverse but not significant. The BMI of the subjects also increased significantly with both systolic and diastolic blood pressure, indicating that subjects who were overweight had a greater likelihood of elevated blood pressure.

The WHR of the women was found to have a significant and positive correlation with only total serum cholesterol. Based on this study, BMI seems to be a more sensitive indicator of changes in serum cholesterol and blood pressure levels than WHR.

Table II
Percentage frequency of subjects with coronary risk factors

Age (years)	Number of risk factors*			
	None n (%)	One n (%)	Two n (%)	Three n (%)
25 – 40 (N=52)	25 (48.1)	20 (38.5)	6 (11.5)	1 (1.9)
41 – 62 (N=51)	11 (21.6)	24 (47.1)	14 (27.5)	2 (3.9)
All ages 25 – 62 (N=103)	36 (35.0)	44 (42.7)	20 (19.4)	3 (2.9)

* – Hypercholesterolemia: total serum cholesterol > 6.2 mmol/L
  – Overweight: body mass index ≥ 30 kg/m² or waist hip ratio > 0.85
  – Hypertension: systolic blood pressure ≥ 160 mm Hg or diastolic BP > 95 mm Hg
  – Family history of diabetes mellitus, hypertension or heart disease

Table III
Correlation between body mass index and waist hip ratio with biological parameters of subjects
(N=103)

	Body mass index		Waist hip ratio	
	Pearson r	p value	Pearson r	p value
Age (years)	0.169	0.09	0.145	0.15
Serum cholesterol (mmol/L)	0.323	0.00	0.212	0.05
HDL-cholesterol (mmol/L)	-0.104	0.30	-0.125	0.21
Lipoprotein(a) (mg/dl)	0.135	0.24	-0.104	0.36
Systolic blood pressure (mm Hg)	0.444	0.00	0.056	0.61
Diastolic blood pressure (mm Hg)	0.432	0.00	0.080	0.46
Body mass index (kg/m²)	–	–	0.417	0.00

Correlation between BMI/WHR with food habits and frequency intake

Food habits and data pertaining to frequency intake have been reported in detail in a previous article[1]. It was found that nearly half of the women subjects ate out at least once a week, while about 60% of them ate take-away food at least once a week. They preferred Chinese food when eating out and for take-away food.

The frequency of eating out and eating take-away food did not show any significant association with the BMI of the subjects (Table IV). Perhaps the more pertinent issue here is not so much the frequency but the usual amount of take-out or take-away food consumed.

The usual amounts consumed for pork, eggs and fish were found to relate significantly with BMI levels.

Table IV
Correlation between body mass index with food habits and frequency intake of subjects
(N=103)

Food habits and frequency intake	Body mass index	
	Pearson r	p value
Frequency of eating out		
(a) Chinese food	0.112	0.30
(b) non-Chinese food	0.180	0.10
Frequency of eating take-away food	0.055	0.61
Amount of sugar added to coffee	0.083	0.45
Frequency of taking nutrient supplements	-0.217	0.04
Usual amount eaten:		
rice (steamed)	0.016	0.89
wheat/rice noodles (boiled)	0.091	0.40
pork (stir-fried)	0.250	0.02
chicken (boiled/steamed)	0.033	0.76
eggs (boiled)	0.265	0.01
fish (fried/steamed)	0.215	0.05
"choy sum" (stir-fried)	0.111	0.31
bananas	-0.175	0.11
papaya	0.090	0.41
"tim sim" (steamed/fried)	0.079	0.47
Chinese tea	-0.051	0.64

These are common foods in the Chinese diet and the result here may indicate that subjects who usually consumed more pork, eggs or fish may also tend to consume higher amounts of food in general leading to higher BMI levels.

There was a significant and negative association between BMI levels and the frequency of taking nutrient supplements. Subjects who reported consuming nutrient supplements may be more conscious of their health and body weight.

Conclusion

Coronary heart disease and stroke are the two major manifestations of cardiovascular disease. Worldwide, the incidence of coronary heart disease varies from almost 1,000 per 10,000 population in Hungary to less than a third of that in Japan. The cost of treating cardiovascular disease with surgery and drugs is very high e.g. it exceeds US$115 billion a year in United States alone[8].

While men are most vulnerable to CHD in their mid-fifties, the onset of the disease in women occurs later in life after menopause. In United States, women aged 35 to 44 years have a CHD mortality that is one fourth the rate of similar-aged men, but by age 75 years, CHD mortality in women approaches that for men. According to Walsh[32], the clinical manifestations of CHD differ in women and men, with the former being more likely to have angina as an initial manifestation, while men may be more likely to present with myocardial infarction. This has led to the belief that the role of cholesterol in the pathogenesis of CHD may also be different between men and women.

The HDL-cholesterol level and the level of triglyceride

are far more important risk factors for women than are total cholesterol and LDL-cholesterol levels[33]. Women with a low level of HDL have a three times higher risk of dying from cardiovascular disease than women with higher levels. Women with a low level of HDL and high levels of triglycerides are at even higher coronary risk, as they have a mortality rate almost eight times greater than women with normal triglyceride levels and low HDL levels.

In general, the middle-aged urban Chinese women in this study may be described as having coronary risks with respect to BMI and total serum cholesterol levels. Family history of heart disease appears to be a significant coronary risk too. The subjects appeared not to be at risk with regards to hypertension, HDL-cholesterol and Lp(a) levels. Very few of them reported smoking cigarettes. The correlation results indicated that dietary intake and habits are important determinants of the BMI status of the subjects. The role of dietary and other non-drug measures in preventing CHD should be further investigated.

Another issue that deserves more study among Malaysian women is the influence of menopause status as a risk factor of CHD. The Nurses' Health Study cohort showed that natural menopause with a gradual decline in estrogen production was not associated with an appreciable increase in the risk of CHD[27]. In contrast, bilateral oophorectomy which causes a marked reduction in estrogen production, was found to increase the risk of CHD. This increase appears to be prevented by estrogen-replacement therapy.

Since the risk of CHD is not homogenous within a population[7] there is a need for cardiovascular studies to be sensitive to differences in CHD incidence and mortality that are due to ethnicity and socio-economic levels, besides gender. In Malaysia where the coronary mortality rate amongst Indians is highest compared to that for Malays and Chinese- the role of biological determinants, including Lp(a), dietary and other adult lifestyle factors as risk for CHD have yet to be established.

As Malaysia continues its rapid pace of economic development into the next millennium, accompanied by the current trends of changes in diet and lifestylest the incidence of cardiovascular diseases can be expected to increase. While more in-depth investigations on coronary risk factors are called for, the gap for more such information among Malaysian women should also be addressed. As revealed in this study, albeit involving a small sample, there exists preventable coronary risk factors amongst urban Chinese women. Preventive strategies depend upon available information that are pertinent to the Malaysian socio-cultural context

Acknowledgements

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