

## Coronary Heart Disease Mortality in Peninsular Malaysia

Sir,

### Introduction

Malaysia is a developing country experiencing an increase in the occurrence of coronary heart disease (CHD). However the mortality rates due to CHD for the overall population in the country cannot be estimated accurately due to incomplete certification of causes of death using the International Classification of Death (ICD). For example, in 1990 certified deaths and causes of death coded using the ICD was only 39.5% of the total death. Moreover these rates differ between the three main ethnic groups in Malaysia, namely the Malays, Chinese and Indians as shown in Table I<sup>1-5</sup>. Therefore it is difficult to make any comparison between the ethnic groups.

In a review of mortality statistics in Malaysia for the period 1950-1989, Khoo K.L. *et al*<sup>6</sup> had used causes of death as a percentage of total certified and inspected deaths among the three main ethnic groups in Malaysia. Although their analysis showed that the proportion of all hospital deaths attributable to CHD was highest among the Indians, the difference was not so remarkable, when compared to the differences found

among Malays, Chinese and Indians in Singapore<sup>7</sup> as shown in Table II. The apparent lack of differences found by Khoo *et al* could be due to the different rate of medical certification among the three ethnic groups in Malaysia. In 1990 the proportion of certified deaths among the Malays, Chinese and Indians were 29%, 51% and 56% respectively<sup>1</sup>. When presented as percents of certified deaths, the data is not useful in determining death rates because the denominator population is not known.

In Malaysia every death has to be reported by requirement of the law. However, only deaths that occur in the hospitals or health facilities are inspected and certified by medical doctors or qualified medical personnel. In such cases the death certificates would have the cause of death certified by such personnel, and coded using the International Classification of Death. On the other hand, the deaths that occur at home will not be inspected by such personnel, where the cause of death would be recorded as reported by the informant.

Table I shows the trends in medically certified and inspected deaths in five-year intervals from 1970 to 1990, among Malays, Chinese and Indians<sup>3-7</sup>. The proportion of certified death as percentage of total deaths has increased by only 7.2% (from 32.3% to 39.5%) during that period. In the same period the proportion of certified deaths among Malays increased by 13.8%, Chinese decreased by 1.9% and the Indians increased by 0.5%. The pattern of medically certified

**Table I**  
Medically certified and inspected deaths as a percentage of total deaths, by ethnic group, Peninsular Malaysia, 1970-1990. Data are percentages (no. of deaths)

Ethnic group	1970	1975	1980	1985	1990
Malay	15.2 (5391)	28.8 (7179)	24.0 (8115)	26.6 (9952)	29.1 (11464)
Chinese	52.8 (10773)	54.1 (11253)	52.5 (11057)	50.4 (11018)	50.9 (11610)
Indian	55.8 (4291)	57.0 (4742)	57.1 (4677)	56.1 (4856)	56.3 (4907)
Others	45.3 (231)	39.9 (165)	54.7 (226)	44.5 (208)	43.8 (238)
All groups	32.3 (20686)	36.4 (23339)	37.9 (24075)	38.1 (26034)	39.5 (28219)
Total deaths	63974	64071	63482	68367	7439

**Table II**  
**Coronary heart disease mortality in Malaysia (1985) and Singapore (1980-84)**

Ethnic group	Malaysia		Singapore	
	% CHD deaths (no. of deaths)	CHD mortality rate per 100,000 population, 30-69 years (no. of deaths)		
	All ages, sexes combined	Male	Female	Sexes combined
Malay	24.3 (2414)	1370.8 (817)	533.3 (304)	961.4 (1121)
Chinese	31.0 (3418)	633.8 (2252)	295.4 (1072)	462 (3324)
Indian	31.8 (1545)	3208.2 (1248)	739.7 (179)	2261.5 (1427)

**Table III**  
**Deaths among urban residents by ethnic group, as a percentage of total deaths,  
 Peninsular Malaysia 1970-1990. Data are percentages (no. of deaths)**

Ethnic group	1970	1975	1980	1985	1990
Malay	16.7 (5913)	13.6 (4714)	16.1 (5435)	23.4 (8744)	24.1 (9485)
Chinese	45.1 (9205)	45.5 (9467)	53.4 (11248)	59.9 (13114)	60.2 (13735)
Indian	34.5 (2653)	33.3 (2767)	37.0 (3033)	45.5 (3940)	48.1 (4192)
Others	41.4 (211)	30.0 (124)	33.3 (138)	30.2 (141)	33.5 (182)
All groups	28.1 (17982)	26.6 (17072)	31.3 (19854)	37.9 (25939)	38.6 (27594)
Total deaths	63974	64071	63482	68367	71439

deaths in the same years has been compared to that of deaths in the urban areas for all ethnic groups. Table III shows the total number of deaths that occurred among urban residents and its distribution among the main ethnic groups.

All hospitals in the Peninsular Malaysia are located in towns or city areas. Each state will have a general hospital and one or more district hospitals. All general hospitals are located in the capital town of the respective state. General hospitals are the referral centres for other hospitals in the state. The General Hospital of Kuala Lumpur caters for the population in the city, but it is also the referral centre for all the general hospitals in the various states. The total number of deaths in Table I is expected to include

most of deaths of its residents, residents in its catchment areas and some deaths of residents from the rural areas. This explains the higher number of deaths in Table I than in Table III. However the distribution of certified deaths among the Malays, Chinese and Indians are similar to the distribution of deaths among the urban residents. Therefore it can be reasonably assumed that all medically certified and inspected deaths covers most deaths of residents in urban areas and some deaths of residents in the rural areas.

#### **Coronary heart disease mortality, 1968-1971**

This analysis is based on medically certified and inspected deaths from 1968 to 1971 as reported by the Registrar General, Malaysia<sup>8-11</sup>. In calculating the

**Table IV**  
**Mortality rate (per 100,000 population) due to arteriosclerotic and degenerative heart disease, by ethnic group, Peninsular Malaysia 1968-1971 (urban areas)**

Age group (year)	Ethnic group	Urban population		Mortality 1968-71*	
		Male	Female	Male	Female
30-39	Chinese	80563	82055	13.3 (10.75)	4.0 (3.25)
	Malay	34050	38567	30.8 (10.5)	12.3 (4.75)
	Indian	16210	17831	97.2 (15.75)	15.4 (2.75)
40-49	Chinese	44011	50725	69.9 (30.75)	16.3 (8.25)
	Malay	26754	30576	123.3 (56.0)	19.6 (6.0)
	Indian	16858	11833	298.1 (50.25)	50.7 (6.0)
50-59 (14.75)	Chinese	45503	49979	164.3 (74.75)	47.0 (23.5)
	Malay	20500	20152	273.2 (56.0)	73.2
	Indian	15886	8591	538.2 (85.5)	139.7 (12.0)
60-69	Chinese	41773	35806	257.3 (107.5)	92.9 (33.25)
	Malay	11813	10771	279.4 (33.0)	69.6 (7.5)
	Indian	8916	3404	684.2 (61.0)	301.1 (10.25)
30-69	Malay	93117	100066	142.3 (132.5)	33.0 (33.0)
	Chinese	211850	21865	105.6 (223.75)	31.2 (68.25)
(Total)	Indian	57870	41659	367.2 (212.5)	74.4 (31.0)

\* average number of deaths shown in parenthesis

mortality rate, the urban population has been considered be the population at risk, for reasons explained above. The average number of deaths in specific age groups for Malays, Chinese and Indians males and females for the period between 1968 and 1971 were divided by the estimated urban population of the three ethnic groups in the specific age groups based on the 1970 population census figures, to obtain the age specific mortality rate.

In carrying out this analysis, the assumptions that have been made are:

i) The percentage distribution of population in various age groups among the urban population of Chinese, Malays and Indians are the same as in the overall population.

ii) The male to female ratio of the urban population of Chinese, Malays and Indians are the same as in the overall population.

In the 1970 population census the distribution of urban and rural population was 28.8 and 71.2 percent respectively, and of the Chinese, Malays and Indians, 47.6%, 14.9% and 34.6% respectively lived in urban areas<sup>12</sup>.

Table IV shows the distribution of urban Chinese, Malays and Indians population aged 30 to 60 years in ten-year intervals and the mortality rate due to arteriosclerotic and degenerative heart disease (420-422, 7th revision of the International Classification of Diseases and Causes of Death). Between 1968 and 1971, the mortality rates per 100,000 population in the

age group 30 to 69 years, for coronary heart disease in males were 105.6 in Chinese, 142.3 in Malays and 367.2 in Indians. In using the urban population as the denominator in calculating the mortality rate due to coronary heart disease, there has been an overestimation of the figure because the total number of certified deaths has a larger catchment population which cannot be estimated. Taking into account the limitation of the population estimates, there is the suggestion that coronary heart disease is more common in Indians. In all ethnic groups, males had a higher mortality rate than the females. Chinese had the lowest mortality rate in both sexes and in all age groups except for females in the 60-69 years group. The differences in mortality rate between Indians and Chinese were highest among the 30-39 age group and fell gradually as age decreased. In the overall age group (30-69 years) for males, the mortality rate among male Indians was 3.5 times that of Chinese and 2.6 times the Malays. The findings of this analysis are comparable to that by Hughes<sup>2</sup> for the Chinese, Malays and Indians in Singapore.

However, the mortality rates only reflect the situation in the urban areas and not the rural or the country as a whole. It would be useful to know the rates for rural areas too. This would only be possible if medical certification of all deaths is made compulsory. The data on causes of deaths by ethnic groups in specific age groups were only available up to mid 1970's, therefore it was not possible to calculate rates for the 1980's and 1990's to study the trends among ethnic groups.

In conclusion, deaths due to CHD, when calculated as percentages of certified deaths did not show a large difference between the Malays, Chinese and Indians because it did not take into account of the population at risk. When the urban population was used as the denominator death rates due to CHD were comparable to that in Singapore. However, this can only give an indication of the situation in the urban areas and not the overall population, and is likely to be a better reflection of the underlying CHD rate than previously published.

M Y Safiah\*, B M Margetts\*\*, \*Institute of Human Nutrition, University of Southampton, Bassett

Crescent East, SO16 7PX, United Kingdom,  
\*\*Wessex Institute of Public Health, Southampton  
General Hospital, Tremona Road, Southampton, SO9  
4 XY, United Kingdom

## References

1. Department of Statistics, Malaysia. Vital Statistics Peninsular Malaysia 1990. Dept. of Statistics Malaysia, Kuala Lumpur, 1992 : 132, 134-235.
2. Department of Statistics, Malaysia. Vital Statistics Peninsular Malaysia 1970. Department of Statistics, Kuala Lumpur, 1972 : 14, 159-160, 180-1.
3. Department of Statistics, Malaysia. Vital Statistics Peninsular Malaysia 1975. Department of Statistics, Kuala Lumpur, 1977 : 176-7, 201.
4. Department of Statistics, Malaysia. Vital Statistics Peninsular Malaysia 1980. Department of Statistics, Kuala Lumpur, 1983 : 162-3, 187.
5. Department of Statistics, Malaysia. Vital Statistics Peninsular Malaysia 1985. Department of Statistics, Kuala Lumpur, 1986 : 143, 242-3.
6. Khoo KL, Tan H, Khoo TH. Cardiovascular mortality in Peninsular Malaysia: 1950-1989. *Med J Malaysia* 1991;45 : 7-20.
7. Hughes K, Lun KC, Yeo PPB. Cardiovascular diseases in Chinese, Malays and Indians in Singapore. I. Differences in mortality. *J Epidemiol & Comm Health* 1990;44 : 24-8.
8. Mohamad YAR. Report of the Registrar General on Population, Births, Deaths, Marriages and Adoptions 1968. Government Printers Malaysia, 1973.
9. Mohamad YAR. Report of the Registrar General on Population, Births, Deaths, Marriages and Adoptions 1969. Government Printers Malaysia, 1973.
10. Mohamad YAR. Report of the Registrar General on Population, Births, Deaths, Marriages and Adoptions 1970. Government Printers Malaysia, 1973.
11. Haji Junid HAR. Report of the Registrar General on Population, Births, Deaths, Marriages and Adoptions 1971. Government Printers Malaysia, 1975.
12. Khoo TH. Population and housing census of Malaysia 1980. General report of the population census. Vol. 1. Department of Statistics, Malaysia, Kuala Lumpur, 1983 : 21.