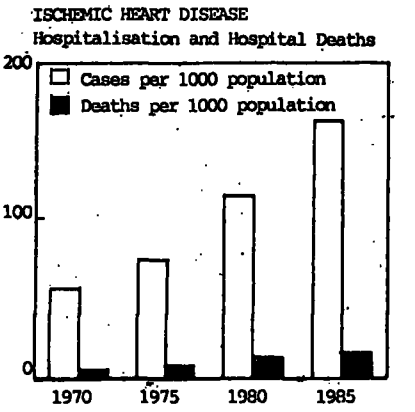
Primordial Prevention of Cardiovascular Diseases in Sri Lanka

Tilak Munasinghe

The disease pattern has altered considerably in recent decades as a consequence of a variety of socio-economic changes that have taken place in the country. An illustrative example is heart disease which has emerged as a major cause of death, as discussed by Dr. Tilak Munasinghe MBBS; PH: M.D. Health Education Bureau, in this paper.

The rising incidence of Cardiovascular Diseases in Sri Lanka is due to a variety of reasons. Diagnostic facilities by way of equipment such as E.C.G. Machines and services of specialists, earlier limited to the General Hospital, Colombo have been extended to other provincial hospitals and as a result more such patients are being diagnosed from different parts of the country. Along with the expansion of the services there is the natural increase in awareness of the symptoms of these disorders in the community, prompting people to seek hospital care. On the other hand some other related factors too are identifible which may have a bearing on the incidence of this group of diseases, the influence of which are more likely to be in combination rather than singly. Some of the important ones among them are cigarette smoking, food habits, life styles and stress. Also, poor housing and living conditions continues to be an important contributory factor in the causation of Acute Rheumatic Fever, leading to chronic Rheumatic heart disease.

The hospitalisation statistics maintained by the Ministry of Health indicate clearly that hypertensive and ischaemic heart diseases (IHD) and malignancies have been on the increase. The statistics for 1985 in the Ministry's 'Annual Health Bulletin, which lists the 10 leading causes of hospitalisation and hospital deaths, show that ischaemic heart disease was the leading cause of death, accounting for 9.6 per-



cent of all hospital deaths. The trends in hospitalisation and hospital deaths over the 15 year period 1970-1985 also illustrate the following upward movement in IHD.

Current Situation and Scope for Prevention

The common cardiovascular disorders in the country could be grouped under the following:

(a) Acute Rheumatic Fever
(b) Chronic Rheumatic Heart Disease
(c) Hypertensive Heart Diseases
(d) Essential Hypertension (e) Other Hypertensive Diseases (f) Acute Myocardial Infarction (g) Other Ischaemic Heart Diseases.

It is observed that there is a significant drop in the incidence of Rheumatic fever from 52.4/100,000 in 1980 to 45.8/100,000 in 1985.

Prevention of rheumatic heart disease is related to early diagnosis and proper management of acute rheumatic fever. There is a very significant reduction in the incidence of this condition. The rate per 100,000 has dropped from 39.7 in 1970 in 27.2 in 1986. This is partly due to the overall reduction in the incidence of Rheumatic fever and partly due to expansion and utilisation of the health care services. The reasonably well organised patient care and community health services with its home visiting programme for maternal and child health could contribute more to provide the necessary follow up care to children suffering from rheumatic fever, to ensure the continued long term therapy so very essential for the prevention of children with Rheumatic fever going into rheumatic heart disease. It would be thus observed that with the available health resources the scope for prevention of both acute rheumatic fever and rheumatic heart disease is considerable in the country.

In the present context of (a) the relatively high incidence of these two diseases (b) the high cost of treatment specially rheumatic heart disease (c) available health resources for their prevention, it seems most rational to pursue an active policy of prevention

TABLE I — HOSPITAL DISCHARGES AND DEATHS DUE TO COMMON CARDIOVASCULAR DISEASES

Name of Disease	1970		1980		1985	
	Number	Rate/100,000 pop.	No.	Rate/100,000 pop.	No.	Rate/100,000 pop.
Acute Rheumatic Fever	4,556	38.4	7,229	52.4	7,432	45.8
Chronic Rheumatic Heart Diseases	4,930	39.7	4,746	32.3	4,423	27.2
Hypertensive Heart Disease Essential Hypertension Other Hypertensive Diseases	15,321	122.4	17,809	187.7	30,293	186.9
Acute Myocardial Infarction Other Ischaemic Heart Diseases	10,140	81.0	19,145	129.9	28,483	175.8

Source: Division of Medical Statistics, Ministry of Health

specially so in the present status of our economy.

The present housing programme is likely to have a favourable impact on these two diseases.

Hypertensive Heart Diseases and Essential Hypertension

Hypertensive Heart Disease, Essential Hypertension and other hypertensive diseases taken together have shown an appreciable increase during the period 1970 - 1980. The rate/ 100,000 population has increased from 122.4 to 187.7 and has remained constant in the next 5 years with a rate of 186.9 in 1985.

TABLE II HYPERTENSIVE DISEASES (1985)

	Total number discharges and deaths	%	Hospital Deaths	%
Hypertensive Heart Diseases	9,437	31.2	345	48.7
Essential Hypertension	13,752	45.4	116	16.4
Other hypertensive diseases	7,104	23.5	247	34.9
	30,293	100	708	100

Source: Division of Medical Statistics Ministry of Health

In 1985 out of a total of 30293 (29585 hospital discharges and 708 hospital deaths) 31.2% (9437) were due to hypertensive heart disease; 45.4% (1375) to essential hypertension; and 23.5% (7104) to other hypertensive diseases. Of the deaths in this group the highest percentage 48.7% was amogst those with Hypertensive Heart Disease.

It is possible to prevent at least a part of these hypertensive patients going into the heart disease stage if more attention is paid to follow up care after discharge from the hospitals, and through more organised individual/group patient education programmes. Unfortunately in the present clinical management of patients these two components do not seem to receive the emphasis they deserve. Though most of the hypertension patients do receive adequate clinical care during their stay in the hospitals and some degree of follow up care immediately after discharge, through the clinics, the latter tends to wear off over a period of time. Sooner or later clinic attendance becomes irregualr and treatment is discontinued. The frequent readmissions of these patients to hospitals reflect to some extent the incompleteness of the management of these patients.

So far no systematic effort has been made to screen susceptible segments of the population to detect hypertensives, in the early stages of the disease. With the available health care structure it seems quite feasible to detect and treat more patients in the early stages of the illness. The total number of patients seeking treatment in our institutions annually out-door and indoor are considerable. (In 1984 nearly 32 million out-patients and 2.5 million indoor—Annual Health Bulletin 1984 Ministry of Health). It seems possible to subject a proportion of these patients, at least those in susceptible age groups and or those with suggestive symptoms amongst them, to blood pressure measurement. Assistant Registered Medical Practitioners and Medical Graduates (M.B.B.S) working in the medical care institutions could be encouraged to identify the hypertensive patients early and take suitable action.

In the Primary Health Care programme currently under implementation the Public Health Midwife (Family Health Workers) with a manageable population of less than 3000 (about 500 families) could extend her activities to cover these other important health problems in the community. She would be in a position to educate and refer those that may need proper examiantion and treatment and assist in the follow up of patients after discharge from hospital.

Ischaemic Heart Disease

The morbidity and mortality due to Ischaemic Heart Disease (IHD) is causing considerable concern. In 1984 of the 6,192 hospital deaths due to diseases of the circulatory system 38.3% were due to IHD (Annual Health Bulletin Sri Lanka 1984; Ministry of Health). Of the total number of patients treated in the 500 hospitals for diseases of the circulatory system (24.6%) one quarter was for IHD. Besides the relatively high incidence a significant proportion of the fatalities seem to occur among the relatively young and middle age groups.

The possible risk factors besides genetics, associated with IHD in the country in general are (a) Tobacco Smoking; (b) Hypertension; (c) Diet; (d) Sedeatary Life Styles (e) Obesity; and (f) Stress. Which of these factors contributes the major share is not known. It is most likely that they operate in a complimentary manner.

Treatment of Ischaemic Heart Diseases is more complex, very expensive and sometimes even disappointing. Provision of such facilities even at very

TABLE III — TEN LEADING CAUSES OF HOSPITAL DEATHS-1985

Serial	Disease	Deaths	% of Total deaths
1	Ischaemic heart disease	2,521	9.6
2	Slow fetal growth & fetal malnutrition & immaturity	1,860	7.0
3	Symptoms, Signs and ill defined conditions	1,801	6.8
4	Pesticide Poisoning	1,439	5.5
5	Pneumonia & Bronchopneumonia	1,353	5.1
6	Diseases of other parts of the digestive system	1,328	5.0
7	Other diseases of the respiratory system excluding Pneumonia, Bronchopneumonia and influenza	1,268	4.8
8	Diseases of the pulmonary circulation and other forms of heart diseases	1,226	4.6
9	Cerebrovascular Disease	1,222	4.6
10	Intestinal infectious diseases	1,158	4.4

Source: Medical Statistics Division

high cost becomes inescapable as the incidence of the disease rises. Investments by way of Intensive Coronary Care Units with expensive equipment, and complete surgical procedures such as coronary by-pass surgery services highly trained professionals etc., are beyond the means of many developing countries. On the other hand appropriate preventive measures in relation to identified risk factors are not only simple they are also cheap and affordable in the poorer countries. Accordingly in the present context it becomes far more rational for Sri Lanka to initiate action on a more comprehensive prevention programme for the prevention of Ischaemic Heart Diseases before the limited resources get fully absorbed into, complex and costly treatment facilities.

Diet

By and large the traditional foods of the people consisting mainly of rice as the staple food, vegetable and fish (dried or fresh) are aetiologically unrelated to cardiovascular disorders. Animal fat consumption by way of meat and other animal products by the large majority of the people, specially in rural sector, is still marginal. However, the majority of the people consume coconut in one form or the other, which is a common food item in a variety of forms. Extract of the kernel is used daily in the preparation of vegetables and fish and the oil for the frying of food and preparation of many traditional sweets, etc. The consumption of meats and other animal products such as eggs and milk have shown some increase over the years, among the urban well to do groups. The meats are also generally prepared with coconut extract or oil.

When allowance is made for number of tourists during the period which has increased from 85011 in 1974 to 321780 in 1980 and if one assumes that a significant proportion of the meat produced is consumed by visitors and the urban middle and upper social classes then the effect of animal fat, if any, as an aetiological factor in I.H.D. is only marginal for the population as a whole in the country. The larger proportion of the rural people do not eat meat regularly. In the urban sector the relatively high price of meat prevents if from being eaten in any significant quantity by the poor. Consequently there may be some degree of concentration among the urban middle and upper social classes. More data would be needed before any valid conclusions could be drawn regards the relationship between consumption of meat and I.H.D.s in the country. Protein malnutrition specially among children, calls for higher levels of animal food consumption by the younger segments of the population. At present the percentage shares spent on fish and meat by poor, middle and upper income groups are 3-4, 4-6, and 6-8 respectively. (Table V).

In absolute terms due to low income levels the actual quantities consumed by the poor would be very little, since their incomes are extremely low. Accordingly both animal protein production and consumption are to be promoted to a much greater extent if nutritional levels of the majority of the people are to be improved to any appreciable extent. Of the animal proteins fish is the more popular

TABLE IV

Animals slaughtered	1970	1972	1974	1976	1978	1980	1982	1984
Cattle and Buffaloe	238,000	244,000	249,300	222,400	189,030	178,000	183,000	237,000
Sheep and Goats	130,000	114,000	138,000	133,000	127,000	136,000	163,000	
Pigs	18,000	21,000	15,000	13,000	18,000	31,000	22,000	
Eggs Produced	431,315,000	582,722,000	406,243,000	365,352,000	360,240,000	544,787,000		

Source: Statistics Department, Central Bank of Ceylon, Economic and Social Statistics of Sri Lanka

TABLE V — PROPORTION OF FOOD EXPENDITURE SPENT ON SELECTED FOOD ITEMS DIFFERENT INCOME GROUPS

Income	Cereals	Fish and Meat	Milk	Sugar and Jaggery	Alcohol and Tobacco	Total
Poor	33-31	3-4	2-3	6-8	9-10	52-60
Middle	25-30	4-6	3-4	6-8	8-11	46-59
Upper	18-20	6-8	6-8	6-8	6-14	42-55
All	32.7	4.3	2.1	7.2	8.9	

Source: Very provisional rate based on Food and Nutrition Policy Planning Division Survey in 1980

item: in the rural sector specially the dried varieties. The total amount of fish sold in the years 1979 to 1984 shows a steady increase.

Sri Lanka is an island and its seas around are relatively rich in fish although its current harvesting methods are poor and therefore yields low. As a result demand seems to exceed supply and fish prices tend to keep high, thereby being beyond the means of many in adequate quantities. Since of late inland fresh water fish breeding has been increasing in popularity and is actively promoted by the Ministry of Fisheries. Culturally too, fish is a more acceptable form of food than meat. If the country's requirements of animal proteins can be met from fish it may serve as one of the means of preventing over consumption of meat fat in the future. If brought within the means of the majority of people through suitable pricing, fish has the potential of meeting country's protein requirements without the implications of increased animal fat consumption there by eliminating one of the risk factors of I.H.D. Such arguments may seem far fetched. Yet if one were to plan ahead for the future to aviod situations that are likely to arise, it seems opportune to initiate action now so that suitable trends in food habits could be promoted. One of the important steps in primordial prevention of I.H.D. is to follow an active policy for increasing fish production and a suitable educational programme specially directed towards younger age groups to promote fish as their main source of animal protein. Such a step could help towards weaning people away from excess animal fat consumption and could be achieved with comparatively less investment.

Stress

Stress of modern living too may have a relationship to the incidence of heart disease. To what extent and how this factor operates is not known clearly.

TABLE VI — TOTAL FISH SUPPLY TO THE MARKET ('000 tons)

1975	1976	1977	1978	1979	1980	1981	1982
158	147	143	158	185	215	211	228

Source: 'Economic Review', June 1983

The urban workers, majority of whom are white and blue collar workers, are perhaps subject to stress of modern living more than the rural farmers. With the rapid expansion of the industrial sector and the increasing numbers of women engaged in long hours out side their home away from their families. The high cost of living and problems of meeting daily needs have risen sharply in the last few years. Their inability to cope with the demand of the work place on the one hand and those of the traditionel mother and house wife could put her under considerable stress.

Another contributory factor towards stress is possibly the high level of competition in the many forms of life activities related to school, pre employment and employment. Formal education and academic qualifications have an important bearing on social status and employment. Stress on the individual seem to commence early in school life. Of the large number of children annually enrolled (364552 in 1980 - Central Bank Vol. No. 1.1981) to the school system the number proceeding to higher grades begin towane gradually from about Grade 6 onwards. Besides economic reasons, the performance level at school, has a bearing on leaving school prematuraly. Some degree of competition seems to operate from the early grades and as the child reaches grade 9 and 10, they begin to operate with greater magnitude in their attempts to seek admission to the more popular streams such as science, mathematics etc. The performance at the first public examination at the end of grade 10 determines the future academic career of the child. The greatest stress seems to be on those children who pass the first hurdle and proceed to Grade 11 and 12 and finally seek admission to the Universities. The number of school children attending private tutories after normal school hours, in their additional learning effort, is increasing. Their recreation and play time is restricted as a consequence. Inspite of the

recent increase in the number of places in the universities, the maximum number that can be accomodated is limited (to about 5000 new admissions annually. Central Bank Vol. IV No. 1 1981). Admissions to the more prestigious professional courses in the Universities such as Medicine, Engineering etc., are still more limited. The very high competetive nature of education may be exposing the child to a series of stresses from his early childhood. Besides the indirect social influence on the child, well-meaning parents, teachers etc., may be directly pushing the child towards higher performance levels which the child finds difficult to cope with. University life too has become or is becoming increasingly competitive. Positions in subsequent employment are determined by the performance level and merit at the final examinations. The child is under continued stress beginning from his early years, and gradually reaching a peak around grade 9 -12 and through University life and employment. This may result in the child living under prolonged stress for long periods. This at least to some extent may relate to the higehr incidence of these diseases among the professional and educated groups. With the increasing avenues of employment, social values attached to jobs are likely to change and the accute competition based only on academic achievements may decline. The stress on the vast majority of the children who cannot reach academic standards required of the professional courses could be reduced by diverting their interests to other avenues of employment which become adequately remunerative and socially recognised. A recent example in the country of such employment is the expanding hotel and travel industry which has attracted significant numbers of educated youths.

Reasonable modifications to the formal school curriculum to build in vocational subjects and adequate opportunities for subsequent employment level training, could perhaps help considerably to ease the present struggle by a large number of school children for the few places in University level academic and professional courses. This aspect of formal education may need adequate consideration, so that necessary changes could be introduced. Such measures are already under active consideration by the government. Educational reforms which would directly benefit the children as well as help to eleminate undue stress would in the long run have beneficial pay offs in respect of stress related diseases.

Another possible approach would be to explore ways and means to promote some of the culture related traditional value systems. Developing countries are rich in such values. Action could be taken to build in strategies, specially to preserve and promote those values and practices to result in a more balanced form of development. minimisng the stress due to competitive consumerism, based on the western model. In Sri Lanka such an approach seems possible. The majority of the people have still not reached that stage of economic levels at the cost of all other life values. Traditional life styles associated with the religions of the country, are still very much prevalent amongst a fair proportion of the population who are satisfied with more simple and moderate life styles. Promotion of such life styles that have a sobering effect, should be built into the development process. Here the greater responsibility lies with economic planners to take suitable action in consultation with Ministries/Agencies of culture and education. Some religions have laid down more specific procedures such as meditation that could help considerably in withstanding stress. They could be part of health care and be actively promoted.

Tobacco Smoking

The stormy association between tobacco smoking andischaemic heart diseases has been well established.

Cigarettes produced in the country have shown a steady increase over the years. Tobacco smoking has become a common habit and may have some relationship to the incidence of cardiovascular diseases in the country.

Data available on smoking habits of the population are meagre. A survey done in 1969 gave the following figures.In a random sample survey of over 155, where about 1000 (1121) subjects were interviewed,48.2% of the males and 1.6% of the females were found to be smokers. (Uragoda and Seneviratne). The total number of cigarettes produced in the last few years has gone up by 53% from 3424 million in 1972 to 5225.5 million in 1980 and based on the data from a 1969 survey the estimated total number of male smokers (i.e. 48% of the over 15 male population) in 1980 was 2,246,602 males and 69,328 females respectively. If the females are ignored the per capita consumption per day had increased from 5.3 in 1974 to 6.4 in 1982. In a 1972/73 survey of smoking habits among school children (1186 children age 5 - 20 years) the mean age of commencement of smoking was 14.4 years (the earliest being 5). Of the smokers 12% were regular smokers and 27% occassional. 45% had never smoked. The regular smokers were observed to smoke 12 cigarettes per day (Dr. Mendis 1972/73). Of the many ways tobacco is used in the country, smoking as cigarettes is the commenest. Among the less educated and lower income groups a preparation named 'Beedi' (smaller than cigarette, tobacco wrapped in a natural leaf and not paper) is commonly used.

The relationship beteween tobacco smoking and heart diseases has not been investigated in Sri Lanka, nor is thereany up to date information available in the smoking behaviour of the community. There appears to be a decline in the habit among the professional classes such as doctors. In 1972 Dr. Mendis observed that 70.43% doctors in the country were not smokers. In 1980 the author found that among 215 Medical Specialists only 40 were smokers (18.6%). In this group out of

187 males only 40 were smokers (21.3%) and there were none among the women medical specialists. There appears to be a decline among the professional students too. Eg: Medical Students. The smoking habit appears to be very uncommon among the females in general in the country even among the middle and upper socio-economic groups. Very rarely does one see women smoking in public. Cultural non-acceptance of the cigarette smoking habit seems to operate to some extent even today inspite of rapid modernisation influences. If the habit falls into disrepute among the higher social classes it could be expected to have a considerable restraining influence on the rest of the people specially on the youth. The proof of such influence is evident in the fact that young women have not taken to the habit to any significant extent most probably due to the non-smoking example set by the women in the higher social strata. With the apparently declining trends in smoking among the professionals and other influential social groups it seems possible to take some positive action to counteract the effect of advertising by the tobacco industry. If the habit could be devalued in our society this together with the restraining effect of cultural values it may seem possible to keep the future generations away from the evil habit before it assumes alarming epidemic proportions as in developed countries.

The contributory element from cigarette smoking towards heart disease could be reduced to a significant extent by such an approach. Responsibility for prevention of the related heart diseases should therefore come from those in society who influecne the social value system.

Sedentary Life Styles and Obesity

The above are features more commonly seen, among the urban well to do groups in whom the I.H.D.s can be presumed to be commoner, (in the absence of any data from special studies and surveys). Besides any genetically related factors perhaps the important causes of obesity are over consumption of sugar and fat, and inadequate physical exercise.

TABLE-VII

SUGAR CONSUMPTION
Per Capita 1975-85

Year	Per Capita (Kgms)
1975	5.5
1976	5.0
1977	8.9
1978	13.6
1979	18.4
1980	16.0
1981	17.8
1982	10.3
1983	21.8
1984	16.4
1985	24.4

Source: Sri Lanka Sugar Corporation.

Per capita sugar consumption has shown a fivefold increase from 5.5kg. in 1975 to 24.4 kg. in 1985(Table V11). The proportion of expenditure on sugar and jaggery is a constant value for all income groups(Table V1). This may be specially significant for the growing generation consequent to infant and child feeding practices in urban middle and upper class families. Nutrition education directed towards selective groups such as young parents may have to include consequences of over feeding specially sugar and fats, resulting obesity and the risk of associated illenesses such as I.H.D. Suitable physical exercise programmes have to be built into the school system where all children are promoted to participate as opposed to the present system where only a few (limited to team members) over-participate and the vast majority are only engaged in cheering and jeering. Health has to be accepted by the school children as an integral part of their overall development along with the academic component.

Conclusion

In Sri Lanka, social development has to an extent preceded economic development resulting in a comparatively literate and well informed population (specially the young) among whom rapid value changes are taking palce. These social values are of crucial importance for they will determine the future life styles of our people. If cardiovascular diseases are related to life styles then measures towards the promotion of the more desirable healthful practices at least in the younger age groups would be of major importance in the primordial prevention of cardiovascular diseases in Sri Lanka. In such a context the economic development which is receiving priority attention in the country should be taken together with the associated consequences, so that timely action could be initiated. The economic development model being adopted seems to be similar to that of the western industrialized countries. The resulting rise in per capita income could lead to a direct adoption of the western model of life. Indeed trends appear to indicate that the population is gradually shifting towards such a way of life, specially in the urban areas. The country being small with rapid communication and now with the total coverage of the country by mass media, including T.V., infiltaration of these values even to the rural sectors, specially to the young, could happen much sooner than expected.

The morbidity pattern has already begun to change from that of a developing country where poverty associated diseases predominate to a mixed one where disease associated with economic development such as accidents, suicides, cardiovascualr diseases and the poverty related diseases are occupying equal positions. In terms of mortality the latter has even begun to ovetake the former. It seems opportune that the country's health sector be examined more carefully and critically, and in relation to the other development sectors. Sri Lanka has a very rich cultural heritage dating back to over 2500 years. Some of the life styles related to such traditional cultural values have come down the ages though inevitable modifications have

taken place in the process. Some of them have had a bearing on the health status of the people. The major religions of the country continue to have considerable influence on the way of life of the large majority of the people. This close linkage with religion has enabled the people to lead lives of moderation and reasonable simplicity without over indulgence in extreme materialistic life styles. This perhaps has helped at least some people to withstand the stress of change and take a more balanced position in life. On the other hand similar culture bound traditional values also have some restraining effect on disease related habits such as over consumption of meats (specially beef and pork) cigarette smoking, alcohol consumption etc. Other healthful practices such as adequate rest and early rising, outdoor agricultural activities are still common ways of life in the rural sector. At this particular moment in our history we are at cross roads of development and the road we take can have a significant bearing on the health and well being of the generations presently growing to adulthood and those yet to come. We could either blindly copy and follow the model of the industrialized western world and strive towards a similar position with all the associated advantages and problems. These countries have achieved economic growth which to an extent can cope up with such problems. In the present world economic order such a rapid and adequate economic development may not be a reality for many years to come for most of the developing countries including Sri Lanka. On the other hand now that the resulting problems of such a one-sided approach to development are clearly visible by the many social, health and other available indices it would be worthwhile to examine the possibility of alternatives. In our countries we could evolve a more suitable path and take a more balanced and rational approach in keeping with our cultural values, well suited to our own aspirations and goals. We could thereby enable our future generations to avoid some of the major problems faced by the developed countries, such as cardiovascular disorders, accidents, alcoholism, drugs etc, which we may not be in a postion to cope with adequately due to resource limitations.

The most productive and feasible interventions in the primordial prevention of Cardiovascular Diseases in Sri Lanka would be those directed towards children. Among the advantages and reasons for such an approach the following would be important :

1) Behaviour and practices associated with life styles are more amenable to change in the early years of life.

2) Sri Lanka is more fortunate than most developing countries in that almost all children born have to go through the formal school system at least for 5-6 years. The numbers continuing at school for longer periods and into the higher grades are steadily rising. Consequent to this formal learning, their levels of literacy and comprehension are higher and therefore a greater voluntary response could be expected to change oriented interventions.

3) Educated youth groups tend to wield considerarable influence over social value systems.

4) The ready and easy access to children enhances the operational feasibility of such a programme.

5) Youth could be reached at a suitable point in their development before habits dangerous to their health get firmly established, for example, during pre-adolescence period when experimentation tends to begin.

6) Reasonably well organised health and education infrastructure presently working in partnership with the school health programme.

7) Availability of a comprehensive multisectoral primary health care team at the implementation level consisting of teachers, health workers and other extension workers.

7) Influence of well organised religious activities in the formal and non formal education systems.

From the point of view of the country's present economic development, the time seems most appropriate to inititate action towards primordial prevention of the diseases such as cardiovascular diseases, accidents, alcohol and drugs related problems etc. which are amenable to such prevention.

The country has the potential for such action. The initiative has to come from the health and other related social, religious and political leaders and professionals (a) in focussing attention to the problem; (b) recognising the potential in the country of prevention of the problem; (c) changing the present emphasis of the health care system from treatment to prevention:

(d) identifying ways and means for effective prevention by collecting the necessary data through scientific investigations; (e) providing the leadership and guidance for planning, implementing and evaluating prevention programmes; (f) influencing the policy makers and political leadership for necessary commitment and resource allocation for prevention programmes.

Our health care system for the most part in mainly designed to operate at the ill-health end of the spectrum, and investments are disproportionally high as we move towards this end. The development of health services in terms of institutions, technology, drugs and professionals have all got concentrated towards this aspect of health care. The trend seems to continue as evidenced

by the expansion of these costly institutions in the developing countries. The major constraint for such an unwholesome expansion fortunately has come by way of the high cost which most countries including the rich are finding difficult to bear. The sheer non-availability of adequate resources are forcing many countries of the world today to take a closer look at their health care systems and approaches with a view to identifying more suitable alternatives. Most of the developing countires which thus far have copied the health care model of the rich industrialized countries are now forced to re-examine their present disease centred approaches more critically and in relation to thier own circumstances. The World Health Organization has given valuable leadership in order to initiate action in these member countries. Health for All, Primary Health Care strategy and now primordial prevention are some of the stricking concepts that have emerged in this regard. Considering cardiovascular diseases as a specific example it seems possible to take some meaningful steps right now in order to minimise the problems in the years to come. Improvement in the physical environment by way of better housing and living conditions would pave the way towards reduction in rheumatic fever and consequent rheumatic heart disease. We could therefore expect a decline in the incidence of this group of heart diseases provided the benefits of economic growth and development reach the large masses of poor people in whom these diseases are prevalent. On the other hand with economic development the incidence of the overall group of ischaemic heart diseases is likely to show an increase. The trend seems to have already begun as seen in the present morbidity pattern of this group of diseases. It is important to examine the risk factors that are amenable to modification in the socio-economic mileau and in terms of operational feasibility in order to plan a suitable course of action.