INTRODUCTION

"A healthy mind rests only in a healthy body. Man's happiness in life depends upon good health, vigour and vitality. Life without health is misery – a virtual death".

(Mangal, 1991).

Man can live in happiness without many earthly possessions, but not without good health. Health cannot be purchased by spending money on medicine and drugs. (Amithaveni, et.al, 2001).

Good health is a fundamental goal for people and the societies, in which they live. Individuals hope for freedom from illness and pain, through the acts of governments, promote policies designed to counteract illness. It is often said that health has three dimensions which are in delicate balance: the physical, mental and social dimensions. So there exists the idea that health is a state of balance between various aspects of life (Popkin, et.al, 2001).

The WHO (1991), describes health as “A state of complete mental, physical and social well being, not merely the absence of disease or infirmity”. According to Rangachari (1995), good health is an asset. Its secrets are right living, balanced diet,
regular exercise, concern for hygiene and avoidance of smoking, drinking, drugs, promiscuity, rashness and fast life.

Disease is the structural and functional abnormality with the implication that the abnormality produced has the potential of covering the quality of life contributing to a disability, illness or leading to death. Diseases can be understood as a failure in and of the individual, an insoluble ‘thing’ that attack the physical machine more or less arbitrarily from ‘outside’ preventing it from fulfilling its essential ‘responsibilities’. Two key concepts in describing health and disease in populations are incidence and prevalence. (Wasir, 2001).

World Health Report (WHO, 1998) points out that the war against ill health in the 21st century will have to be fought simultaneously on the two main fronts of infectious and non communicable diseases (NCD) and that many developing countries will come under greater attack from both. The major dilemma facing these countries is how to promote economic growth, reduce infectious diseases and at the same time delay or prevent the outset of non-communicable diseases. (Drewnowski and Popkin, 1997).

The global health transition, also referred to as the epidemiological transition, can be defined as the complex changes in pattern of health, disease and mortality that result from demographic and associated economic and societal changes in a world population that is getting older. In this transition, non-communicable diseases (NCD) replace infectious diseases, perhaps with the exception of HIV/AIDS, as primary cause of morbidity and mortality. But, by contrast with the health transition experienced during industrialization and economic growth in developed countries, many developing countries are in a rapid process of urbanisation are experiencing a health transition characterized by a double burden of disease in which non-communicable diseases becomes more prevalent and infectious diseases remain undefeated. (Vorster, et.al, 1999).

Several hundred years ago, respected people such as doctors, nutritionists, health food advocates both in India and abroad have been warning us that excessive eating and
drinking may make a man look healthy and with a reddish tinge, although he is not so. Such people are more prone to heart attack, sudden death, hypertension, diabetes, and cancer. (Allison, et.al 1999).

Diseases of cardiovascular system currently account for a large proportion of morbidity and mortality in various parts of the world. In The United States, the death rate from heart attack rose from 8 per lakh in 1930 to 23 in 1935, to 71 in 1940, to 226 in 1952 and 190 in 1963. After 1968, there is decline in deaths due to heart attacks in The United States. In 1985, approximately 1.5 million people suffered heart attacks and 35% had died of it, half of the death occurring before the patient reached the hospital. There is virtually an epidemic of heart attack in The United States and other industrialized countries except Japan and Southern Europe where the deaths due to heart attacks are less as reported in the WHO-MONICA Study (1989). We are expecting a similar epidemic of heart attacks in Asians, and especially in the middle and higher income group urban subjects. The Indian Social Class and Heart Survey and the Indian Life-style and Heart Study have demonstrated that heart attacks are 2-3 fold higher among middle and rich class who consume more than 21% from dietary fat and are usually sedentary. In developed countries, heart attacks are more common in poor social classes. (Popkin, 2001)

Deaths due to heart attack have been increasing in India from 8% in 1960 to 19% in 1980 and recent estimates indicate a further increase to 25%. The disease has equally affected India. Every year 27 lakhs people die of heart attack. After menopause women are equally affected as men. These account for a quarter of total number of death every year. (Chadha and 1995).

The prevalence of heart attack in India was 1-2% in rural and 2-3% in urban subjects before 1970. However after 1980, the prevalence of heart attack has almost doubled in rural area and has increased 10 fold in urban subjects. The increase in heart attack rate is real and not due to better awareness and diagnosis. There are several causes for the rising rate of heart attack among Indians. Economic development without proper health and general education, less therapeutic advances and reach to people,
decreases in death due to infection and under nutrition and increase in life-span are some of the important causes of rise in rates of heart attacks in Indians and other developing countries. (Singh, 2001).

In most countries of the world, heart attacks are most common in the 6th decade of life whereas in Indians, heart attacks occur mainly in the 5th decade and about 10-15% subjects in any series from India were below 40 years. (Easwaran, 2001). The inutero-undernutrition and rapid changes in diet and lifestyle predispose Indians to develop heart attack even on modest increase in risk factors at relatively younger age. We now know that heart attacks are due to atherosclerosis, which is due to the narrowing of arteries by depositions of fatty acids, fibrin and cholesterol in the arterial wall. This conclusion has been made based on the study of coronary arteries which supply blood to the heart and arteries of the younger people who died in the wars or as a result of accidents. Among American soldiers of average 22 years, killed in action in Korean War, 77% are reported to have gross pathological evidence of atherosclerosis. Those Korean soldiers who were eating American high fat diet had significantly greater atherosclerosis compared to Koreans eating Korean low fat food. (Hu, 1999).

Cardiovascular disease (CVD), stroke, and other non-communicable diseases now cause 39% of all deaths in developing countries. The alarming trend is that non-communicable diseases affect younger people in developing countries more often than in developed countries. Of the estimated 12 million global death per year caused by cardiovascular disease (CVD), and stroke, an increasing number occurs in developing countries, where-as dramatic reductions in mortality from circulatory disease are experienced in developed countries such as Australia, Canada, Finland, New Zealand, and The United States. (WHO, 1998).

Kirti (2000) pointed out that the deaths from cardiovascular disease in India, were currently equal to that in all developed countries put together. Further, the WHO, (1996) had predicted that deaths due to cardiovascular disease would double by 2015.
Going by the trends in the incidence of cardiovascular diseases in India, the country is likely to have 100 million heart patients, ie nearly 60 percent of the world’s heart patients by the year 2020, according to an observation made by Anil Kumar, President of Cardiological Society in India (2001). Though the average life expectancy of an Indian has increased by around 25 percent, despite of infectious diseases and malnutrition related disorders, there has been a phenomenal increase in the incidence of vascular disorders due to change in lifestyles attributable to globalization and urbanization. (Express Healthcare Management Team, 2001).

The higher risk of cardiovascular disease in Indians is explained in part by the tendency of Indians to accumulate fat around mid rib, increased prevalence of diabetes mellitus, less protected and good cholesterol and higher levels of plasminogen activator inhibitor. (Raj, 1998).

Cardiovascular diseases are the diseases that are affecting the heart and blood vessels, primarily the arteries. The various types of cardiovascular diseases, which are commonly found, are:

1. Atherosclerosis
2. Hypertension
3. Myocardial Infraction
4. Angina Pectoris
5. Heart failure
6. Coronary Heart Disease or Ischaemic Heart Disease
7. Congential Heart Disease
8. Rheumatic Heart Disease (Singh,2001).

Atherosclerosis, hardening of arteries, begins in childhood and over the course of decades often culminates in a heart attack, stroke or peripheral vascular disease. [Nampoothiri, 1998, McConanchie and Roberts, 2000]. Hypertension is a condition of sustained abnormally high blood pressure, which has a potentially detrimental effect on the heart, kidneys, eyes, and brain and peripheral circulation. [Huskission (1996)]. High
blood pressure, or hypertension, affects people of all races, sexes, ethnic origins, and ages. Various causes can trigger this often symptomsless disease. According to health guidelines, normal blood pressure is below 130/85 and “high normal” is between 130/85 and 139/89. Myocardial infraction is a pathological term that describes the macroscopic and microscopic appearances of heart muscle that has become dead, or necrotic, due to deprivation of its oxygen supply. (Srinivasan, 1998).

Angina is a discomfort or pain, adjacent to the chest, which is due to a transiently inadequate supply of blood to heart muscle. This is not severe enough to cause lasting damage. The most common place for angina is the centre of the chest, and it usually seems to be located behind the breast bone very often, however, it is felt in the other sites, as well as, such as the sides of the chest, the lower jaw, and the arms (especially the left) as far as the wrist and hands. Occasionally it occurs in the chest and in the upper part of the abdomen. (Julian and Masley, 1997).

Heart failure is a state that is reasonably easy to recognize from a patient's symptoms and signs, but it is less easy to define at physiological or cellular level. Psychologically, heart failure is the state in which an increase in filling pressure, and therefore fibre length, causes a full rather than a rise in cardiac output. At a cellular level, heart failure is due to loss of contractility, and is the result of an abnormality in the formation of cross bridges between acting and myosin. [Hampton, 1997]

Heart disease occurs when the coronary arteries are occluded to a greater or lesser extent by cholesterol containing atheromatous plaque. These plaques cause a reduction in the blood flow to the heart muscle and symptoms of ischaemia of the heart muscle (inadequate supply of blood) may occur during exercise. [Piper, 1996]. Congenital heart disease is the disorder of heart that begins or exists at birth [Jones, 1995]. Rheumatic heart disease is a serious pathological condition of the heart that may occur following rheumatic fever and inflammatory infectious disease characterized by fever and joint pain. (Julian.)
In most cases, cardiovascular disease is caused by an insufficient flow of blood through the muscle tissue due to structure of the blood vessels or arteriosclerosis. The process of arteriosclerosis can be influenced by our dietary behaviour and lifestyle, and factors which considerably increase the likelihood of cardiovascular diseases are called risk factors.

The risk factors of cardiovascular diseases are:

- Inherent biological characteristics like age, sex and family history of cardiovascular diseases.
- Modifiable physiological characteristics, such as raised plasma cholesterol and raised blood pressure, which have been repeatedly shown to be major risk factors. Obesity and diabetes also fall into this group.
- Behaviours, such as cigarette smoking, high alcohol consumption and a diet high in saturated fat, low in fruits and vegetables.
- Social characteristics like social class, or ethnic origin.
- Other environmental factors like cold weather and severe emotional stress.


The general consensus was that Indians have a genetic predisposition for cardiovascular diseases. There is a steady increase in the number of patients admitted with acute myocardial infraction in Christian College, Vellore, Male patients have shown a striking increase. This average age for males is 53 years and for females it is 58 years. This average age for the first attack had remained without any change, between 1961 to 1996. But the lower limits of the standard deviation have been at 40 years and at times even as low as 36 years. A further observation was that there was a ‘disturbing trend’ of more cardiovascular diseases among women. There was greater prevalence of cardiovascular disease among those with a history of smoking, diabetes mellitus, hypertension and a family history of cardiovascular diseases. (Mohan, 2001).

In June 1996 the Health and Nutrition magazine published a Health Survey of 120 urban Indians (10 each from 12 cities, nation wide) and in its conclusion remarked:
During the period April '98 till March '99, over 15,540 persons from the various cities in India underwent the COMPUTERISED HEALTH SCAN, and participated in this National Urban Health Survey. 75.74% were male, 24.26% were female, the average age of both genders was 41 years (minimum aged 16 years and maximum age was 76 years). The average height registered for the urban male was 5'6", female was 5'1". The average urban Indian weight is 72.00 kgs for male and 63.00 for female from this survey. In Urban Indians, cardiac risk status is worse than standards existing in other world capitals and the Urban Indian is more at risk for cardiovascular disease than his international counterparts. Within India, it would seem that the South is most at risk, with the highest percentile of family history, hypertension, diabetes and hypercholesterol (triglycerides) in particular. The same study seems to place the East at the lowest at risk, in almost all factors. (Kennedy, 2001)

Cardiovascular diseases and the prevalence of risk factors are higher among high-income groups. It was reported that there has been a rapid increase in the prevalence of diabetes and cardiovascular diseases in India in association with rapid changes in diet and lifestyle (Singh, et.al, 1997).

In India the dietary intake is related to socio-economic status, the higher income group consumes 45% of the available fat. National surveys indicate that per capita income, better housing, ownership of land; occupational status and education were positively associated with higher intake of dietary fat. (Gupta, et.al,1998).

SCOPE OF THE STUDY

Rural and urban prevalence of cardiovascular disease in North India was studied by Chadha, et.al, (1990), but such studies are scarce in South India. Prevalence rate of cardiovascular diseases is studied very rarely in Kerala. Though a literate state, killer diseases are higher among Keralites. In these circumstances, it seems to be very apt to study about the effect of dietary factors and lifestyle on the prevalence of cardiovascular diseases among urban and rural population.
OBJECTIVES OF THE STUDY

The main objectives of the study are:

1. To find out the prevalence of cardiovascular diseases in rural and urban areas.
2. To find out the effect of dietary factors on the prevalence of cardiovascular diseases.
3. To find out the effect of lifestyle on the prevalence of cardiovascular diseases.

HYPOTHESIS OF THE STUDY

The hypothesis was drawn under the assumption that:

1. Prevalence of cardiovascular diseases is more in urban area than in rural areas as the dietary and lifestyle factors are different.
2. Dietary factors have influence upon the prevalence of cardiovascular diseases.
3. Lifestyle has influence upon the prevalence of cardiovascular diseases.

METHODOLOGY IN BRIEF

The investigator confined her study to the geographical area as Thiruvananthapuram district, the capital of Kerala State in South India. The researcher adopted multistage sampling techniques. From the 52 wards in Thiruvananthapuram district, six wards from each, urban and rural areas were selected. These primary stage units were selected by simple random sampling. The wards selected were Poovar, Malamukal, Venganoor, Venjaramoodu, Kattakada and Kilimanoor from rural area and Poojappura, Kawdiar, Peroorkada, Perumthanni, Manacaud and Jagathy from urban area. From these primary units, two residential associations from each ward were selected by simple random sampling. And from each selected residential association household sample were selected randomly using lottery method and the sample were selected using judgement sampling technique. In total, the sample size for the study was 3000. Out of this, 1500 were from urban areas and 1500 from rural areas. Six urban and six rural wards were selected from the 52 wards. From each ward, 2 residential
association were selected and 125 households from each residential associations were selected for the study. Both males and females between the age group of 24-64 years were included in the study.

Survey method was used to collect data. In the first phase, questionnaire was used and in the second phase, interview method was adopted. Using the questionnaire, the socio-economic background data and the prevalence of cardiovascular diseases among the sample were collected. In the second phase the cardiovascular patients were selected as sub sample. Interview was done to collect data regarding the dietary factors, lifestyle patterns, anthropometric and clinical data of the sub sample. The collected data were coded, tabulated and analysed using statistical methods with SPSS computer package (version. 8) and the results were found out based on it summary and conclusions were drawn.
FORMAT OF REPORT

The report is presented in five chapters as detailed below:

Chapter I: General Introduction and relevant sections of an introductory chapter.

Chapter II: Presents the review of related literature pertaining to the topic under investigation.

Chapter III: Details with description of the method of study, the sample selected, the instruments with which the data was collected, the procedure employed for collecting data and the statistical technique in the present study.

Chapter IV: Presents the details of data analysis, followed by the discussion of results.

Chapter V: Summarises the study in retrospect, followed by major findings of the study. The implications of the study are discussed and suggestions for the research are also given.

********************