Coronary Heart Disease (CHD) is the most common cause of mortality and morbidity in the world today. Based solely on the demographic trends, World Health Organisation (WHO, 2005) estimates that death attributable to CHD would be double by 2015, and over the period it will emerge as the single largest contributant to mortality, accounting for nearly one third of all deaths.

The geographical prevalence of CHD indicates that Asian Indians have approximately three times the rates of cardiac diseases as do the age matched European Americans. As given by Ismail et al. (2004) and Goel et al. (2003) the risk of CHD among Indians is three to four times that of white Americans, six times that of Chinese and 20 times that of Japanese.

Similarly, the incidence of CHD in younger generation is also very high among Indians. To quote Gupta (2005), CHD affects Indians five to ten times earlier than the other world communities. The percentage of patients below the age of 45 years suffering from Acute Myocardial Infarction (AMI) is reported to be as high as 25 to 40 percent among Indians as against up to five percent in the Western population. This trend is most obvious among the Indian immigrants in other countries (Joshi et al., 2007)
In Great Britain, it was reported that even during early 1990’s, the first AMI among Indians at an age below 40 years is ten times higher than local whites (Hughes et al., 1990). In Singapore, Indians reported having 15 times higher risk of CHD than Chinese and 10 times higher than local Malays of below 40 years of age (Yap et al., 201)

Thus Indians as a community are prone to CHD at a much younger age. The disease pattern is also severe and diffuse. The first infarct course itself is worse among Indians. This is reflected by three times higher rate of re-infarction and two times higher rate of mortality. Indians also show higher incidence of hospitalisation morbidity and mortality than other ethnic groups (Uppaluri, 2002). Since 50 percent of CHD related deaths in India occur below the age of 70 years compared with just 22 percent in the West, it can be inferred that CHD starts at early age in India and it has a malignant and progressive course (Walsh, 2004 and Yusuf et al., 2004). Therefore WHO (2001) estimated that 60 percent of world’s cardiac patients would be Indians by 2010.

The rural-urban difference in the occurrence of CHD among Indians has also been emphasised repeatedly by many authors. The population based cross-sectional surveys conducted during the year 2003 reported that prevalence of CHD in India was three to four percent in rural areas (2 fold higher than that compared with the rate 40 years ago) and eight to ten percent in urban areas (6 fold higher than that of 40 years ago) with a total of 29.8 million affected. This included 14.1 million in urban areas and 15.7 million in
rural areas (Gupta, 2005 and Gupta, 2004). This estimate is comparable to the figure of 31.8 million affected, derived from extrapolations of the Global Burden of Disease (GBD) study. Region-wise comparison further illustrated that South Indians show a higher prevalence with the highest incidence reported in Kerala (Singh and Sen, 2003).

Several risk factors appear to have contributed to the acceleration of CHD epidemic in India in recent times. Confluence of both conventional and non-conventional risk factors predicts the occurrence of CHD among Indians.

A risk factor according to McGill and McMahan (2005) is any measurable character of an individual that predicts the individual’s probability of experiencing the development of clinically manifest disease.

Conventional risk factors like hypertension, diabetes, hypercholesterolemia, abdominal obesity and smoking owe their origin to growing urbanization and western acculturation among Indians (Mohan et al., 2007 and Joshi and Parikh, 2006). Non-conventional risk factors like hyperinsulinemia, insulin resistance, lipoprotein A are determined by genes or other programming factors and their high prevalence among Indians probably explain the malignant precocious nature of CHD that typically affects Indians (Joshi et al., 2007 and Bhatnagar et al., 1995).

Among the conventional risk factors, smoking increases the risk of CHD by three to five times. In contrast to the West, smoking is increasing in India particularly among younger generations (Reddy et al., 2006). Studies
have shown that 40 to 50 percent of males in India are smokers. Tobacco is the major risk factor for Indians as the same is being used in different forms.

Hypertension also continues to be a standard risk factor associated with CHD. Prevalence of hypertension is increasing in the urban population. In metropolitan cities, 11 to 27 percent of people are having hypertension (Gupta, 1997). The prevalence of diabetes mellitus in the middle age group is about 20 percent and an additional 20 percent may be having impaired glucose tolerance. Even a moderate elevation of blood glucose among Indians, is associated with increased risk of CHD (Enas et al., 1998).

Central obesity is yet another a strong indicator of CHD and even a modest increase in body fat with central distribution further increases the risk. The urban population is more affected in this respect than their rural counterparts. The Body Mass Index (BMI) among urban Indians as compared to that of rural Indians is 24 versus 20 among males and 25 versus 20 among females. As reported by Enas et al. (1998) the urban men are having a waist to hip ratio (WHR) of 0.99 compared to 0.95 among rural men. Such increases in BMI and WHR result in significant insulin resistance and dyslipidaemia.

Migration from rural to urban environment and migration from India to industrialised countries form another special risk factor for CHD in Indians (Siscovick, 2005 and Yusuf et al., 2001). Migration is usually associated with sedentary life style and higher consumption of calories, saturated fats, salt, tobacco and alcohol (Gupta, 2005). These factors contribute to obesity,
dislipidemia, hypertension and diabetes. Elevated serum cholesterol, one of the major risk factors for the disease process also gets worsened by obesity, lack of exercise, excess food intake, stress and smoking. Other factors that predispose to this condition are hyperlipedemia, insulin resistance, diabetes, mental stress and depression (Kumar et al., 2005).

Recently there indicated a relationship between low birth weight, and susceptibility to CHD in adult life (Barker hypothesis). Indian babies who are born under weight due to maternal malnutrition, predispose them to increased risk of diabetes and heart attack during adulthood (Barker and Godfrey, 2004).

According to Saxena (Walsh, 2004) Indians have genes that make us predisposed to heart disease. A Lancet study indicated that South Asians have elevated levels of artery clogging blood chemicals, including LDL Cholesterol and triglycerides, and are suffering from deficiency in HDL cholesterol. Oflate ‘Thirty-gene theory’, of Naresh Trehan of Earth Heart Institute, which holds that South Asians adapted over many generations to regions of frequent famines, when exposed to the recent over-abundance of food, their bodies face difficulty in making a metabolic U-turn. The result is ‘high insulin intolerance’ with accompanying elevated levels of diabetes and obesity.

However, Dr Yusuf of Mc Master University in Canada, one of the world’s foremost epidemiologists of CVD, who championed the idea that ethnicity is a significant determinant of heart disease, is today skeptical about
it (Walsh, 2005). According to him about 80 percent of the risk can be accounted by known risk factors like smoking or obesity or blood pressure, lifestyle and eating habits, and very little by genetic risk factors.

He further added that “Mankind’s genes as a whole evolved across all ethnic groups similarly”. This means that no one is doomed by uncontrollable factors and that it is feasible to protect oneself by modifying one’s life style.

So the vulnerability of Indians to CHD is possibly related to different nutritional, environmental and life style factors which are modifiable. This envisages the need for identifying and controlling the conventional risk factors like hypertension, diabetes mellitus, smoking, hyperlipidemia, tobacco consumption and central obesity at a much younger age.

There is a dearth of region wise information regarding the predisposing factors and the management of CHD in India. Most of the data on lipid levels and other risk factors among Indians have been obtained from studies on immigrant Asian Indians. And data on lipid profile and other conventional risk factors in Indian patients living in India are insufficient.

Determination of risk factors for CHD in Indian population, especially South Indians with special reference to Kerala, which reports the highest incidence rate of CHD, will enable planning of a population based screening and intervention strategies for the control and prevention of CHD.
Information on these lines provides a better understanding of the problem, which in future, would help to suitably modify the existing health care services or even in redesigning the preventive and management strategies.

However, since the ultimate objective is to prevent the disease, much effort has been devoted to ascertain whether the risk factors particularly those that can be modified, are truly the cause of CHD, and by implication, whether modification of risk factor will reduce the risk for disease.

Hence the present study entitled “Base line risk factors for coronary heart diseases in Kochi” has been undertaken with the following objectives.

1.1. To study the effect of socio-economic factors on the risk of coronary heart diseases.

1.2. To examine the relationship between life style pattern and coronary heart diseases.

1.3. To study role of anthropometric measurements on the risk of coronary heart diseases.

1.4. To find out the risk factors of coronary heart diseases through the selected biochemical parameters.

1.5. To evaluate the dietary habits of subjects and its influence on the risk of coronary heart diseases.