“Live Sensibly – Among a thousand people, only one dies a natural death; the rest succumb to irrational mode of living”
– Maimonides

India is experiencing a rapid health transition, with a rising burden of chronic diseases. The epidemic of infectious diseases is rapidly being overtaken by non-communicable diseases. Non-communicable diseases pose a serious challenge to the developing countries and according to Ahmed et al. (2009), seven out of every ten deaths will be from chronic non-communicable diseases by 2020.

Non-communicable diseases reduce Gross Domestic Product (GDP) between one and five per cent in developing countries as a result of productivity loss, due to morbidity and mortality in the most productive years of population groups stated Alwan et al. (2009).

The prevalence of cardiovascular disease in India has risen four-fold in the past four decades stated Rissam et al. (2010). Indians are succumbing to heart disease and stroke in the most productive age of their lives and about a decade earlier than their western counterparts.

Chronic non-communicable diseases such as heart disease and stroke, diabetes mellitus, cancer and chronic respiratory diseases account for approximately 60 per cent of total mortality in the world, with around 80 per cent of these deaths occurring in low and middle income countries reported Chathurvedi and Bhargava (2007)

Cardiovascular disease (CVD) is a major cause of morbidity and mortality in industrialised countries and one of the most important public health problems globally.

Compared with other countries, India suffers the highest loss in potentially productive years of life, due to deaths from cardiovascular disease in people aged 35 to
64 years. The loss of lives was 9.2 million in 2000 and by 2030, this loss is expected to rise to 17.9 million (Enas et al., 2007)

Cardiovascular disease causes 8.5 million deaths among women annually. It is the largest and single cause of mortality among women, accounting for one-third of all deaths among women worldwide. In developing countries, half of all deaths of women over 50 are due to heart disease and stroke reports Xavier (2008).

Worldwide, an average of more than 16 women per minute dies of cardiovascular disease. Coronary heart disease alone accounts for 2,50,000 deaths in women it affects more women in racial minorities. By 2015, in India, it is forecasted that 8.98 and 1.30 per cent of women belonging to the age group of 20 and 29 respectively from urban and rural areas will be affected by coronary heart disease. In the 30 to 39 years age group, 10.18 per cent of women from urban and 2.90 per cent of women from rural areas are projected to be affected by coronary heart disease in India (Trehan, 2007).

Leenen et al., 2010 points out those women under the age of 65 years are more than twice as likely as men to die from myocardial infarction. Within six years, 35 per cent of women have a recurrent infarction compared to 18 per cent of men.

While many women apparently still do not know it, heart disease is the number one killer of women. About a half million women die of heart disease in the United States, indeed, more women than men die from cardiovascular disease. It is because women often end up with microvascular disease, blockage of smaller arteries instead of larger arteries that is revealed in the tests (Jahangeer et al., 2010).

Regardless of the gender, cardiovascular risk is known to increase with age, smoking, hypertension, central obesity, blood lipids and glucose levels. The increased mortality of women due to heart disease can be reasoned out that women are more likely to be under diagnosed and under treated than men and women experience coronary heart disease differently from men. The exclusion of women from clinical trial and epidemiologic studies have resulted in the under estimation of the incidence of the
diseases among women especially the young. Cardiovascular deaths in men are declining but in women it remains the same or is increasing reports Kotha (2006).

Hwang *et al.* (2009) states that the control in risk factors can prevent or delay the onset of heart disease even in women with strong family history. In those who already have heart disease, the control of risk factor can delay or even halt the progression of the disease and strongly improve the outcomes.

A lifestyle associated with poor diet, lack of exercise and depression, increase the risk of heart disease. Obesity is a disease and risk factor for coronary heart disease that has now reached epidemic levels in adults. Body Mass Index and coronary heart diseases are positively related (Hedley, 2004).

Obesity increases the chances of developing other risk factors for heart disease, especially high blood pressure, high blood cholesterol and diabetes. Diet is a significant modifiable risk factor for cardiovascular disease. An unhealthy diet is high in saturated fat, salt, refined carbohydrates and low in fruits and vegetables.

Hawkes (2006) reports that junk foods cause one third of heart attacks and the culprits are diets heavy in fried foods, salty snacks and meat. While the share of cereals is declining, intake of fruit and vegetable remains inadequate.

Since the 1960’s, the average daily calorie intake has increased across the globe. Diet has been known for years to play a key role as a factor for chronic heart disease. Traditional, largely plant based diets have been replaced by high fat, energy dense diets with animal foods and a healthy diet is one that improve or maintain optimal health. This usually involves intake of nutrients from all the food groups including an adequate amount of water (Brindle *et al.*, 2006).

A diet rich in high carotenoid (an antioxidant) is associated with a reduced risk of heart disease. Beta-carotene is an economically available form of antioxidant from all green leafy vegetables (Kritchersky, 1999).
Physical inactivity increases the risk of developing heart disease by 1.5 times and doubles the risk of developing type II diabetes. It significantly raises the risk of high blood pressure. Women have up to a 55 percent greater chance of developing high blood pressure than moderately fit women of the same age (Marcus et al., 2006).

Physical inactivity is also linked to blood clots and abnormal level of fat in the blood. Nearly a quarter of all global Ischemic Heart Disease (IHD) is related to physical inactivity. For every extra kilogram of fat, one tends to produce 20 milligrams of cholesterol per day. High abdominal fat is known to be a great risk factor in accumulation of body fat around the hips (Ghafoorunissa and Kamala, 2007).

The other primary factor that causes cardiac problems is stress. Modern Indian women are subjected to excessive stress at home and work. Overworking, under resting and a higher level of frustration at work bring about greater aggression. Excessive stress increases the risk of work place accidents as well as chance of developing cardiovascular disease (Porter, 2007).

Behavioural changes such as reduced fat intake, increased physical activity, stress management and social support would promote healthy lifestyle and reduce the risk for lifestyle diseases such as cardiovascular disease (Toobert et al., 2002).

Heart healthy living habits should start at an early age with sensible eating. Keeping cholesterol levels low, getting regular exercise and maintaining a healthy weight greatly diminishes the risk of cardiovascular problems reports Parkand et al. (2008).

Women who are employed play a vital and multiple roles. The need for a balance, both at home and work place is important. Women tend to be care givers and out of the sense of duty, they have a hard time justifying behaviour that are “just for themselves” such as regular exercise, recreation and relaxation (Fogoros, 2009).

Women with her multiple role in the family, career and society faces tremendous challenge in her everyday life. Increase in lifestyle standards, more of convenience food consumption and recreation with reduced physical activity has made women the victims
for cardiovascular disease. The mortality rate among women suffering from cardiovascular disease is also higher than that of men across the world, including India (Roger and Menthal, 2006).

In order to reverse the tide of rising cardiovascular disease epidemic in Indians, the implementation of preventive strategies is vital. The principle strategy must include interventions not only to detect and treat cardiovascular disease aggressively but control the risk factors that have already developed and prevent the development of risk factors in the first place (primordial prevention).

Given the burgeoning epidemic lifestyle disorders in the growing population, it is vital to identify the risk factors that can be modified which may form the basis of preventive programmes. Being aware of the risk factors, taking proactive measures to tide over them or keep an existing disease under control and screen for high risk cases to catch the disease early is important.

A landmark achievement of epidemiologic research has been the identification of risk factors for atherosclerosis, coronary heart disease and stroke. The primary prevention of cardiovascular disease involves the assessment and management of risk factors in an asymptomatic person. Persons with multiple risk factors are the largest population for primary prevention (National Cholesterol Education Programme, 2002).

This study will throw light on the prevalence of cardiovascular disease among young women and screen the young women at risk of cardiovascular disease. Creating awareness and enlightening women on therapeutic lifestyle changes is imperative at this juncture and will help in the primordial and primary prevention of cardiovascular diseases. Hence the present study “Prevalence and Risk Assessment for Cardiovascular Diseases among Young Women and the Impact of Therapeutic Lifestyle Modification” was undertaken with the objectives to

- study the prevalence and risk factors of cardiovascular disease among selected women population
develop a Heart Health Risk Assessment Index and assess the risk for cardiovascular disease among young women

promote suitable intervention strategies and evaluate the impact in reducing the risk for cardiovascular disease.