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INTRODUCTION

Infinite, inscrutable and indescribable are the principles that govern life on earth. Man, acclaimed to be the roof and crown of creation, has always been and is still in the throes of hostile forces, threatening his very existence. He has left behind several milestones in his journey to a safe haven that would ensure peace and security. He has evolved ways and means to meet the dangers, accruing from disease and ill-health and in the process, evolved various systems of medicine as part of the rescue operations. Homoeopathy is one of his most prominent achievements in this ceaseless war against ailments, which provide him with armour that can withstand the onslaught of many an evil, manifested in the form of distressful hazards to his health and well being. Of all the ailments mankind is afflicted with, diabetes is perhaps the most widely-spread and yet the least dreaded one.

Diabetes Mellitus, as it is clinically termed, is a chronic disorder characterized by hyperglycemia with or without glycosuria, resulting from an absolute or relative deficiency of insulin. Clinically, diabetes is characterized by a wide spectrum of disorders, ranging from asymptomatic hyperglycemia to abnormalities in various vital organs like heart, brain, retina and peripheral vessels. Once regarded as a single disease entity, diabetes is now seen as a heterogeneous group of diseases, resulting from a diversity of aetiologies,
environmental and genetic, acting jointly. Diabetes is a long term disease with variable clinical manifestations and progression. Diabetes is mainly classified into two categories – primary and secondary. Primary diabetes is again classified into two types – Type I diabetes and Type 2 diabetes.

Type 2 Diabetes is a non-autoimmune, complex, heterogeneous and polygenic metabolic disease condition in which the body fails to produce enough insulin, characterized by abnormal glucose homeostasis (Gupta et al. 2008).

Type 2 Diabetes is often discovered by chance. It is typically gradual in onset and occurs mainly in the middle aged and the elderly. Its main causative factors are the much acclaimed longevity of life, obesity, indiscreet diet, sedentary lifestyle and increasing urbanization. The disease is now detected even in children and adolescents.

1.1. Context of the Study

Diabetes is a major public health problem all over the world. Its prevalence varies among different populations, being very high to the extent of 40 percentage of all those above the age of 15yrs. By the year 2025, the number of people suffering from diabetes in the world is estimated to be 350 million, of which 70 million will be in India. Type 2 Diabetes is the most common type in India, accounting for more than 95 percentage of the total. Recent studies have shown that the prevalence is increasing at the rates of 10 to 13
per cent in urban and 2.4 percentage in rural areas. The incidence increases with age and 58 per cent of the Indian diabetics have a positive family history.

1.1.1. Diabetes Mellitus – A Lifestyle Disease

Diabetes is a lifestyle disease. The youth segment of the community is the prime asset of any nation. When the health of this particular group deteriorates, it is the overall development of the nation that suffers. Diabetes affects the most productive period of life and it will stifle the prosperity of a whole country.

Type 2 Diabetes is considered to be a multifactor or complex disease as it involves a wide variety of ramifications, arising from the complex interaction between various genetic and environmental factors in its pathogenesis. Multiple evidences suggest that there exists a genetic predisposition, transmitted through the family bond. Identical twins invariably develop the disease when exposed to the same environmental factors. In genetically predisposed individuals several environmental factors precipitate the onset of diabetes.

Obesity – The current obesity epidemic due to the modern sedentary life is a major factor that predisposes Type 2 Diabetes. Obese persons show a relative resistance to the action of insulin, owing to the reduction in the number of insulin receptors on the target cells. Obesity, particularly central adiposity has
been accepted as a risk factor and the risk is commensurate with both the duration and degree of obesity.

Physical Inactivity and Sedentary Lifestyle – They are found to create a congenial condition for the disease to set in. Most of the diabetics are physically inactive. Sedentary lifestyle appears to be an important risk factor. Lack of exercise can slacken the interaction between insulin and its receptors.

Diet – Highly saturated fat intake has been associated with a higher fasting glucose. Sweet foods, rich in refined carbohydrate, consumed frequently will increase the demand for insulin secretion. High intake of dietary fiber will reduce the level of blood glucose.

Alcohol – Excessive intake of alcohol can increase the risk of diabetes by damaging the pancreas and liver, promoting obesity in the process.

Stress – Surgery, trauma and stress can act as causatory or precipitating factors.

One of the most striking epidemiological features of diabetes is that its incidence is now quite high in the lower strata of the society whereas it was almost unknown among the poor people a few decades ago.

1.1.2. Lifestyle Diseases in India

Studies of the world economies reveal that by the year 2050 Brazil, Russia, India and China, will receive the highest rating among the most developed
economies in the world. Surveys conducted on the economic developments in India in the last few decades testify that it is the country’s youth who have contributed most towards to this prosperity. It is sad that the youth in the present generation have taken to a sedentary lifestyle. Amusements held out by the television and the internet seems to have got into their nerves. This may, in turn, lead to ill health, evidenced in maladies such as high blood pressure, depression and type 2 diabetes mellitus.

Current world economic statistics reveal that a whopping 11.6 percentage of the total world healthcare expenditure goes for the diabetes alone. Though India accounts for just 1 percentage of this global outlay, it amounts to a staggering-$2.8 billion. Studies tend to show that the Asian countries will be the worst sufferers of diabetes in the coming decades. To mention in particular, a study conducted by the International Diabetes Federation (IDF) points out that women are more vulnerable to this disease than men.

Two - third of working women suffer from lifestyle diseases. 53 per cent of them skip meals and go for junk food owing to work pressure and deadlines. According to a survey conducted by the Associated Chamber of Commerce and Industry (Assocham), 68 per cent of the working women in the age bracket of 21-52 years were found to be afflicted with lifestyle ailments such as obesity, depression, chronic backache, and hypertension and type 2 diabetes. The report further said that as 27 per cent of females in urban India
were employed, their health issues are a major concern for both society and business.

The study ‘Preventive Healthcare and Corporate Female Workforce’ also said that long hours of work, often under strict deadlines cause up to 75 percentage of working women to suffer from depression or general anxiety disorder. Women employed in sectors that demand long hours such as the media, knowledge process outsourcing and touring jobs are often unable to take leave even when they are sick. They are compelled to work mainly due to job insecurity, especially in these days of financial meltdown. Factors such as exposure to industrial pollutants and environmental toxins, inadequate restful sleep, lack of exercise, scorching sunlight exposure, mal-nutrition, excessive intake of alcohol and drug abuse also cause lifestyle diseases. Considering the fact that women play vital and multiple roles, especially those who are employed, it is high time that justice be meted out to them by easing the condition of their work both at home and outside.

1.1.3. Lifestyle Diseases in Kerala

The rapid changes in lifestyles, hypertensive heart diseases and type 2 diabetes are casting a dark shadow on life in this so-called God’s own country. A fairly recent blood sugar test, conducted by Health Action by People among 5000 persons in Neyyattinkara Taluk, has shown that the...
incidence of diabetes among those above 20 years of age was 8.2 per cent. In Trivandrum district it was as high as 16.2 to 18 per cent.

The percentage of diabetes prevalence in coastal areas of Kerala was less than 3. The exact reason had not been worked out; it could be possibly due to the fact that this was a community engaged in work that demanded considerable physical exertion.

Diabetes is a serious ailment as it affects every organ in the body, leading to complications of complex nature. The incidence of diabetes at the all India level, according to the Indian Council for Medical Research is just 2.3 per cent. 11 per cent of those about 20 years in Kerala suffer from type 2 diabetes. Those in the overweight category in the 25 plus age group constitute 35 per cent. 21 per cent of the offices going women above 30 years are overweight. The percentage of smokers of 20 years is 40.

These statistics project the enormous financial burden the state would have to bear in the next two decades in the management of lifestyle diseases. Low fat diet with the inclusion of plenty of grains and leafy vegetables and moderate eating habits could be a good beginning. Hippocrates, known as the father of Modern Medicine, has said that a time will come when food is taken as medicine and medicine will be taken as food. It is well that people take a cue from the emerging information and take practical measures on a war footing to change their lifestyles.
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Famine killed millions in most countries of the world. It induced the world to make concerted efforts to increase the output of food grain and other food products to prevent its recurrence. Curiously enough, now more people are said to die of over-eating than of mal-nutrition. Food is easily available now but it is not consumed in the right manner. People today eat according to their convenience, ignoring all the time-honoured conventions.

The nutrient value of the intake food is not taken into account and the net result is deficiency or excess. This imbalance in the diet is said to have led to an increase in most of the lifestyle diseases. The importance of nutritional medicine lies in taking stock of what we eat, how we eat and how much we eat.

1.1.4. An Epidemiology of Diabetes Mellitus

According to the World Health Organization, 171 million people worldwide or 2.8 percentage of the global population suffer from Diabetes Mellitus. Its incidence is increasing rapidly, and it is estimated that by 2030, this number will almost double (Wild et al.2009). Diabetes mellitus occurs throughout the world but it is more common (especially type 2) in developed countries. The greatest increase in its prevalence is, however, expected to occur in Asia and Africa (WHO 2005).

The National Diabetes Information Clearinghouse estimates that diabetes costs $132 billion in the United States alone every year. About 5 - 10
percentage of diabetes cases in North America is Type 1, with the rest being type 2. The American Diabetes Association cites that 1 in 3 Americans born after 2000 will develop diabetes earlier or later in their lifetime.

It is estimated that 20 per cent of the current global diabetic population reside in the south East Asia region. The number of diabetic patients in the countries of the region is likely to triple by the year 2025, an enormous increase from 30 million to 80 million. With these projected increase in the diabetic population in future, South East Asian countries will have take up the brunt the challenge and to bear the maximum global burden of the disease in the initial decades of the 21st century.

An analysis of the age based prevalence rates of Diabetes Mellitus consistently showed an increase with increasing age. In the region, the ratio of people in the age group 30 years and above will increase from 37.2 per cent in 1995 to 41.9 per cent in 2005. There will be a corresponding increase in the proportion of diabetics in older age groups. The prevalence of diabetes is approximately twice in urban areas than among rural population. The percentage of diabetics residing in urban areas is projected to increase from 54 percent in 1995 to 73 per cent by the year 2025.
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**Figure 1**
Prevalence of Diabetes in Rural Population of India
(National Family Health Survey – 2005-06)

**Figure 2**
Increasing prevalence of Diabetes in India
(Persons with Diabetes in millions) – ICMR study 2011
The International Diabetes Federation recently published its findings revealing that in 2007, the country with the largest number of people with diabetes was India (40.9 million), followed by China (39.8 million), the United States (19.2 million), Russia (9.6 million) and Germany (7.4 million). The disease is not one that affects only the rich, though it is most likely to affect those with a sedentary lifestyle and who consume diets that are indiscriminate and imbalanced.

Prevalence of Diabetes in Urban Cities of India

- Kashmir - 6.1% (Zargar et al.2000)
- New Delhi - 15% (Prabhakaran et al.2005)
- Mumbai - 9.3% (Ramachandran et al.2001)
- Kolkata - 11.7% (Ramachandran et al.2001)
- Hyderabad - 16.6% (Ramachandran et al. 2001)
- Bangalore - 12.4% (Ramachandran et al.2001)
- Chennai - 14.3% (Mohan et al.2006)
- Trivandrum - 16.3% (Raman et al.1999)
- Ernakulam - 19.5% (Menon et al.2006)
- Multi-centric - 7.1% (Mohan et al.2008)
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The people in India have an increased susceptibility to Diabetes Mellitus. This propensity was substantiated by the results of multiple surveys conducted among Indians residing in Fiji, Singapore, South Africa, and the USA. The rates of diabetes in migrants from the Indian sub-continent have consistently shown to exceed those of the local population. The prevalence of the disease in adults was found to be 2.4 per cent in rural and 4-11.6 per cent among urban dwellers. High frequencies of impaired glucose tolerance, ranging from 3.6 to 9.1 per cent, indicate the potential for further rising prevalence of diabetes in the coming decades.

New figures for diabetes prevalence in India indicate that the epidemic is progressing rapidly across the nation, reaching a total of 62.4 million persons with diabetes in 2011. Phase one results of the Indian Council of Medical Research-India Diabetes (ICMR-INDIAB) Study have provided data from three States and one Union Territory, representing nearly 18.1 per cent of the nation’s population. When extrapolated from these four units, the conclusion is 62.4 million people live with diabetes in India and 77.2 million are on the threshold, with pre-diabetes (R.M. Anjana et al. 2011).

1.1.5. Global Morbidity and Mortality associated with Diabetes:

- Close to four million deaths in the age group of 20-79 years in 2010 (International Diabetes Federation (IDF) Report 2009)
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- Accounting for 6.8% of global all-cause mortality in this age group in 2010 (IDF 2009). IDF 2006 reported >50 million diabetes people in South East Asia.
- 7.97 million Disability Adjusted Life Years (DALYs) were lost because of diabetes (Jönssom 1998)

Diabetes- Morbidity and Mortality in India:

- Responsible for 109 thousand deaths in 2004 (Venkataraman et al. 2009)
- 1.157 million years of life lost in 2004 (Venkataraman et al. 2009)
- 2.263 million Disability Adjusted Life Years in India during 2004 (ICMR 2006)

1.1.6. Diagnosis and Prognosis of Diabetes Mellitus

Around 50 per cent of the cases exhibit the classical symptoms of polyuria, polyphagia, and polydypsia and weight loss. Other clinical manifestations are non-healing ulcers, recurrent respiratory or urinary tract infections, rapid changes in the refractions of the eyes, unexplained rapid weight loss, increased tendency for fungal infections, peripheral neuropathy and premature onset of heart disease and stroke.

Diabetes with the classic symptoms can be diagnosed clinically. Since there can be asymptomatic cases, diabetes should be suspected even in the absence
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of symptoms. Fasting blood sugar and postprandial blood sugar test have been made mandatory in all health checkup examinations.

Once diabetes is established, it tends to be lifelong. Death is mainly due to incidental complications like renal failure, myocardial infarction, cerebrovascular accidents or more direct developments such as diabetic coma, hypoglycemia and infection. Cumulative morbidity arising from blindness, peripheral vascular disease and peripheral neuropathy cripples the long term survivors. Proper therapy arrests the progression of established complications.

1.1.7. Management of Diabetes Mellitus

The aim of treatment is to achieve normal blood glucose levels throughout day and night, to bring down the intensity of the pathological symptoms and to prevent complications. The four pillars of Diabetic management are diet, exercise, drugs and patient education, backed up by regular monitoring of glycemic control and early detection and treatment of complications.

1.1.8. Lifestyle Changes

Controlled diet is the corner stone in the management of diabetes. The objective of dietary therapy is the optimization of glycemic control, while ensuring a nutritious and balanced diet. The calories need to be restricted in order to avoid obesity. Some detrimental food stuffs which contain
saturated fat, excessive salt and cholesterol which causes vascular complications have to be avoided.

Regular exercise forms an important component of the therapy. A careful assessment of the expected benefits and the associated risks in individual patients should be made while incorporating an exercise programme in the treatment. Exercise lowers blood glucose concentration, improves insulin sensitivity and creates a sense of well-being and improves the quality of life. Several recent studies have demonstrated the beneficial effects of yogic practices in the management of diabetes.

As with any chronic debilitating disease, a diabetic faces a series of challenges that affect all aspects of his/her daily life. The patient must accept that he/she may develop complications related to diabetes. Emotional stress may provoke a change in behavior and the patient may refuses to adhere to dietary, exercise or therapeutic regimen. This can lead to the appearance of either hyper or hypoglycemia, depression and eating disorders. Diabetes is a disease that affects a large segment of the population and alters the lifestyle of the sufferer. Insulin deficiency whether relative or absolute, affects the metabolism of carbohydrates, lipids, proteins, electrolytes and water with consequences that might be grave.
1.1.9. Prevention of Diabetes Mellitus

The active search for disease among apparently healthy people is the fundamental aspect of prevention. This is embodied in screening. Screening of the high risk group is considered more urgent and imperative. Screening test is recommended because a large number of asymptomatic diabetics are unaware that they have the disorder. The disease may be present for up to a decade without oppressive symptoms. The treatment may favourably alter the natural history of diabetes. 50 percent of the victims are found to have already developed complications at the time of the diagnosis.

The preventive measures comprise maintenance of normal bodyweight through adoption of healthy nutritional habits and adequate physical exercise especially in the high-risk population (Alberti et al. 2007). Since alcohol and smoking indirectly increase the risk, they should be avoided (Primary Prevention).

As soon as the disease is detected, it must be adequately treated. The aim of treatment is (a) to maintain blood glucose level as close within the normal limits as is practicable and (b) to ensure ideal bodyweight. Proper management of the diabetic is most important to prevent complications. The diabetic should take a major share of the responsibility for his own care under medical guidance. Patients should carry an identification card, showing his
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name, address, telephone number and the details of treatment he is receiving (Secondary Prevention).

Diabetes is a major cause of disability resulting from the numerous complications it is likely to generate. The main objective at the tertiary level is to organize ‘Diabetic clinics’. There is a great need to establish such clinics in Panchayats and Cities alike. At this level should begin basic, clinical and epidemiological research. It has also been recommended that local and national registries for diabetics should be established (Tertiary Prevention).

1.1.10. Homoeopathic Approach

Homoeopathy is a system of medicine, which works on nature’s law of cure. The term homoeopathy is a combination of two Greek words ‘homoeo’, meaning similar and ‘pathos’ means suffering. It is a system of drug therapeutics based on the ‘Law of similars’ or ‘likes be treated by likes’. The basic concept of the disease in this system is that all natural diseases are due to the derangement of the vital force in an individual. When there is an adverse influence on the vital force, its state is deranged and it produces abnormal sensations, functions and secretions. This will later on lead to structural or tissue changes.

Homoeopathy has a great role to play in the prevention or management and control of diabetes mellitus as well as in reducing morbidity and mortality
resulting there from. Proper understanding of homoeopathic concept of disease and constitutional treatment can bring great relief to suffering humanity.

In Homoeopathy, only one single, simple medicinal substance is to be administered in a given case, because only one remedy can be the most similar at any given time to the condition of any diabetic patient. The suitableness of a medicine for any diabetic patient does not depend on its accurate homoeopathic selection alone. The appropriate dose of the prescribed medicine is equally important in achieving the expected result. The special advantages of Homoeopathic medicines are that they do not have baneful side effects or lead to addiction of any kind.

The concept of vital force or vital energy is as old as the beginning of civilization. In the healthy condition of man, the spiritual vital force that animates the material body (organism) keeps all parts of the organism in harmonious vital operations. When there is an adverse influence on the vital force, its state is deranged and it produces abnormal sensations (polyphagia, polydypsia and polyuria), functions and secretions (defective secretion of insulin). This will later on lead to structural changes (destruction of beta cells of pancreas) most detrimental to the co-ordinated function of the organism.

Since the vital force is dynamic in nature, the distortion caused by diabetes, can only be cured by the dynamic power of homoeopathic medicine, not by
its material quantity. In homoeopathy, only those medicines are prescribed, whose medicinal properties are known through drug proving. These recordings of drug proving give the only reliable knowledge of medicine, which is very essential to cure diabetes.

Human being is a holistic entity. So we have to consider his emotional, mental and physical level in an integral manner. Treat the man who is suffering from diabetes, not the disease ‘diabetes’. Two persons suffering from diabetes may not be treated with the same medicine. Homoeopathy considers the peculiar presentation of the disease through the patient (constitution, mental peculiarities, modalities, etc.).

By proper selection and administration of homoeopathic medicines, we can prevent or delay the onset of diabetes, especially in high risk population (primary prevention), and by judicious administration of Homoeopathic constitutional medicine, we can prevent or delay the complications caused by diabetes (secondary prevention).

1.2. Need for and Significance of the Study

Diabetes is an ‘iceberg disease’. Although increase in both the prevalence and incidence of Type 2 diabetes have occurred globally, they have been particularly dramatic in societies undergoing economic transition, in newly industrialized countries and developing countries. It will be the leading cause
of morbidity and mortality in the world in the foreseeable future (WHO 2005).

Once considered as a disease of the middle age and the elderly, it has recently escalated in all age groups and is now seen in younger age groups, including adolescents, especially among high risk population. The majority of diabetic patients develop the disease during the most productive period of their life. This will have major implications with respect to health care needs and costs as they are most likely to live up to an older age to develop the chronic complications of diabetes (Kumar et al.2008).

The major determinants for projected increase in the number of diabetes in developing countries are population growth, age structure and urbanization with the rise in the urban/rural population ratio in all regions. The ever growing prevalence of obesity among urban dwellers will cause an increase in the number of diabetics in the urban areas. It is estimated that 20 percent of the current global diabetic population reside in South-East Asia.

Diabetic patients, if undiagnosed or inadequately treated, develop multiple chronic complications that can lead to irreversible disability and death. Coronary heart disease and stroke are more common in diabetics than in the general population. Micro vascular complications like diabetic renal disease and diabetic retinopathy and neuropathy are serious health problems, resulting in deterioration of the quality of life and premature death. In fact,
diabetes is listed among the five most important determinants of the cardiovascular disease epidemic in Asia. Metabolic disorders in pregnant diabetic women as well as those caused by gestational diabetes (diabetes diagnosed for the first time during pregnancy) pose a high health risk, to both the mother and the foetus.

Some alarming diabetes statistics reveal that one person in the world is dying of diabetes in every second and two new diabetic cases in the world are being identified every 10 seconds. And the very same diabetes statistics tell us that by the year 2025, there will be as many as seven million new diabetic cases in the world. Type2 diabetes is found mostly in adults, though of late, it has started cankering children too in large numbers. The main reason why people become diabetic, according to available information, is obesity or overweight.

Nearly one third of those aged 65 and above has the disease. An additional 30 percent of adults have pre-diabetes, a condition marked by elevated blood sugar that has not yet crossed into the diabetic range.

Currently, ‘Health Action by People’ has undertaken a cross-sectional study on the prevalence of Type 2 diabetes and a few cardiovascular risk factors among selected rural and urban communities of Kerala. The picture that emerges is quite disturbing. The expected rural urban difference does not exist in several regions including Kerala. The prevalence, even in the rural
areas of Kerala, is similar to or even higher than that reported from urban India. In absolute terms, approximately 16 million men and 14 million women are suffering from type 2 Diabetes. If factor Impaired Glucose Regulator (IGR) is also taken into consideration, Kerala has at least 51 million people with impaired glucose metabolism (Ramankutty et al.).

Amrita Diabetes and Endocrine Population Survey (ADEPS) was conducted as a community-based cross-sectional survey to assess the prevalence of undetected diabetes mellitus and impaired glucose tolerance (IGT) and their possible relationship with various risk factors in Ernakulam district in Kerala. Among the screened subjects who underwent blood testing, the prevalence of newly diagnosed diabetes was 10.5 percent. The prevalence of IGT was 4.1 percent. The ADEPS has reported the highest prevalence of diabetes in a population in India (Ernakulam-19.5%).

Homoeopathy is a holistic form of medicine. Cost wise, there is no other medical system in the world which is as inexpensive as homoeopathy. It is economical so that it can reach out to the poorer sections of the society. No patient, who aspires for a speedy cure without side effects, can ignore homoeopathy.
1.3. Statement of the Problem

The rate of growth of diabetes in India is greater than that in any other country in the world because of its increased urbanization and westernization of lifestyle habits (WHO 2005). The type 2 Diabetes among Indians occurs at a younger age, ten years earlier than its onset among the people in other parts of the world. The earlier onset, delayed diagnosis and inadequate care lead to an increase in morbidity and mortality which, in turn, adversely affect the country’s productivity and prosperity. Data from the Indian Council for Medical Research study demonstrate that periodic screening can reduce the ratio of new cases of diabetes to known cases (R.M.Anjana et al.).

One’s habits profoundly affect one’s well-being for better or for worse. The rate of lifestyle related diseases in Kerala is higher than the rate of these disorders in other states. Risk factors for lifestyle related disorder in Malayalees manifest at young ages. Modern man, in spite of his advanced technologies, is denied many of the conditions that make for physical well being. He is constantly faced with forces that impair health. There is little need for physical work, so he remains under exercised. His inclination to eat too much of food, that is nutritionally poor, makes matters worse. He is constantly stimulated and has little opportunity to relax. His physical demands are low while his emotional pressure is high.
The term- ‘diabetes capital’ of India suits Kerala. The population in Kerala has increased susceptibility to type 2 Diabetes. Unfortunately, there is still inadequate awareness about the real dimensions of the problem among the general public in Kerala. There is also a lack of awareness about the existing intervention for preventing diabetes and the management of the complications resulting there from. The existing primary health care systems are not only inadequate but are ill-equipped to cope with the additional challenges, posed by this chronic non-communicable disease (Fairoz 2007). The socio-economic implications of the problem have not been properly assessed either by the government or by the welfare agencies.

The research problem is stated as ‘An analytical study of the role of lifestyle changes in the development and management of Type 2 Diabetes Mellitus in Kerala – A Homoeopathic approach’

1.4. Objectives of the Study

1. To study the efficacy of homoeopathic medicine in the management of Type 2 Diabetes.

2. To evaluate the relevance of lifestyle as an adjunct to Homoeopathic medicine in the management of Type 2 Diabetes.

3. To analyse the role of dietary changes in the development of Type 2 Diabetes.
4. To ascertain the impact of lack of exercise in the development of Type 2 Diabetes.

5. To study the influence of stress in the development of Type 2 Diabetes.

6. To study the relevance of positive family history in the development of Type 2 Diabetes.

1.5. Hypothesis

Lifestyle changes as an adjunct to Homoeopathic medicine are quite effective in the management of Type 2 Diabetes Mellitus.

1.6. Methodology

The investigator has adopted survey, co-relational and an experimental research designs for the study. Cross sectional survey design was used to analyse the role of lifestyle changes in the development of Type 2 Diabetes Mellitus in Kerala. Experimental study was used to analyse the role of lifestyle changes in the management of Type 2 Diabetes Mellitus. Formal experimental design was adopted with control group. Single blind experiment was designed for the study.

1.6.1. Population

The people of Kottayam and Ernakulam districts of the Kerala state constitute the population for the present study. Those who satisfied the diagnostic
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criteria for Diabetes Mellitus according to World Health Organization, irrespective of sex and come under the age group of 25-65 years were included in the experimental study. Type I Diabetes Mellitus, Secondary Diabetes Mellitus, FBS > 200 mg/dl, PPBS above 300 mg/dl, HbA1C above 9, cases with complications and Diabetes more than 10 years of duration were excluded from the study.

Those who come under the age group of 25-65 years were included in the cross sectional survey.

1.6.2. Sampling technique

From the different sampling techniques, the investigator selected a stratified random sampling technique for the Cross sectional survey. The sample size was 1000. They were selected randomly from each homogenous group. A simple random sampling was selected for the experimental study. Two-group simple randomized design was adopted in the present study. The investigator selected 100 diabetic patients as ‘control group’ and 100 diabetic patients as ‘test’ or ‘experimental group’ by simple random method. A Standardized questionnaire was prepared for the Cross sectional survey and a standard proforma was prepared for the Experimental study. Secondary data were collected from medical books, journals, magazines, internet and previous researches done in this area. The data were analyzed on the basis of the
objectives and hypothesis, by applying descriptive and inferential statistics using SPSS.

1.7. Scope of the study

From a public health stand-point, the only cost-effective way of dealing with diabetes is to prevent it. Type 2 diabetes is associated with an affluent lifestyle and is more likely to develop in genetically predisposed individuals who eat too much and exercise too little. Effective health education has shown promising results in the primary prevention. Screening of high-risk people is essential because early detection and effective control of hyperglycemia in asymptomatic diabetics helps to reduce morbidity (Secondary prevention).

Lifestyle changes as an adjunct to Homoeopathic medicines help to prevent or delay the onset of Type 2 Diabetes Mellitus, especially in the high risk population (primary prevention). By proper administration of homoeopathic constitutional medicine along with lifestyle changes, helps in preventing or delaying the complications of diabetes (secondary prevention). The scope of the study also includes the prevention of diabetes through identification of high risk subjects and early intervention in the form of health education.

“Homoeopathy is the latest and refined method of treating patients economically and non-violently” (Mahatma Gandhi).
1.8. Outline of the Report

Further report of the study follows in seven chapters. The second chapter deals with a review of the relevant literature. The third chapter deals with the pilot study and the fourth chapter deals with the research methodology and the broad plan for data analysis. Results and Analysis of the data is given in the fifth chapter. Chapter six consists of a multifaceted discussion and Chapter seven carries the conclusions and recommendations.