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INTRODUCTION

1.1 CONTEXT OF THE STUDY

Diabetes is seems to be an iceberg disease. It is one of the main threats to human health in the 21st century. The past two decades have seen an explosive increase in the number of people diagnosed with diabetes worldwide. Pronounced changes in the human environment, human behavior and lifestyle, have accompanied globalization, and these have resulted in escalating rates of both obesity and diabetes. The attention of readers needs to be drawn to the meaning of diabetes. It is a group of metabolic diseases characterized by elevated level of plasma glucose resulting from defects in insulin production, insulin action or together (American Diabetes Association – ADA, 2013). Diabetes can be classified into four types, specifically Type 1 diabetes, Type 2 diabetes, Gestational diabetes and Diabetes associated with other conditions or syndromes (ADA, 2009).

It must also be recognized that the main nature of diabetes is elevated plasma sugar level; the categorization of diabetes depends on the production and usage of insulin and its evidence on glucose level in the blood. Type 1 diabetes is a metabolic disorder manifested by an absence of insulin secretion due to auto immune destruction of the beta cells of islets of langerhans in the pancreas. But Type 2 diabetes is characterized by the relative insufficiency of insulin production and a decreased insulin action and increased insulin resistance. Type 2 is much more common than Type 1 diabetes. Along with Type1 and Type 2 diabetes Pregnancy induced diabetes is existing with some degree of glucose intolerance with its onset during pregnancy (Brunner, Suddarth & Smeltzer 2014).
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Census of India (2013) reported that major population of India is domiciled in the Countryside. Statistics shows exact 742 million people in India resides in the rural area and it contributes 70% of the total India’s population. It is very much crucial to evaluate the widespread presence of diabetes among ignorant, rural Indian population in order to blueprint diverse policies to control diabetes mellitus.

It is estimated that more than 25.8 million people in the United States have diabetes, almost one third of diabetes were not diagnosed. In 2010, the number of people above 20 years who were recently diagnosed with diabetes increased by another 1.9 million (Centers for Diabetes Control and Prevention [CDC], 2011). By 2030, the number of cases is expected to exceed 30 million. In 2000, the worldwide estimation of the occurrence of diabetes was 171 million; currently the number of cases of diabetes is 347 million. Of these more than 90% are Type 2 diabetes. By 2030, this is expected to increase to more than 360 million (WHO, 2012).

As outlined previously, Fauci, Hauser, & Longo (2008) also reported that the number of people with diabetes is estimated at 285 million in 2010, and it is expected to be over 438 million by the year 2030. More than 80% diabetes deaths occur in poor and middle income countries. The explosive increase in number of people diagnosed with diabetes makes this disease a new health threat in the 21st century. It is shocking that India leads the humanity with leading figure of diabetes subjects earning the feature of being termed as the ‘diabetes Capital of the World’. Population in India has an increased susceptibility to diabetes mellitus. This propensity was demonstrated by multiple surveys of migrant Indians residing in Fuji, Singapore, South Africa, UK and USA. The rate of diabetes in migrants from the Indian Sub continent have consistently shown to exceed those of the local population (Park, 2013).
The incidence of diabetes all over the world is computed to be approximately 150 million. This data is expected to be twofold by 2025. The prevalence rate of about 5.4%. Greater number expected in china and India (WHO, 2002). Nearly 63% of total diabetic patients are residing in developing countries. In India the Type 2 is a silent, chronic unidentified killer among adult population. The incidence of this condition is 2.4% in rural and 4.0 – 11.6 among adult population in the rural and urban population respectively (Clement, 2009). The Prevalence of Type 2 diabetes in Kerala is inflated in the highland area (86.2%) and less in the seaside (73.6%). Statistical data shows the prevalence rate is 12.4% in urban, 8.1% in the midland, 5.8% in the highland and 2.5% in the coastal areas. As age advances the prevalence rate of Type 2 diabetes also advances in all the regions and both sexes. Female shows a higher pervasiveness in the highland and seashore areas and males in the urban and midland regions. The age-adjusted generality of Type 2 diabetes among 30 – 64 year old in Neyyattinkara was 9.2% among male population, 7.4% among female population (Kutty, Soman, Joseph, Pisharody, & Vijayakumar, 2000).

With regard to the main characteristics of diabetes mellitus, it is a heterogeneous group of disease characterized by hyperglycemia which can result from a variety of reasons, such as environmental, genetic and can be both (WHO2003). India is rapidly becoming urbanized and industrialized which leads to unhealthy lifestyle changes which negatively affect metabolic functions and this can lead to diabetes. (Sharma, 2008) Supported with the findings of the survey conducted by the central ministry of health and family welfare in 2009, shows genetic influence, varied dietary preferences, inactive lifestyle and psychological tension contributes to the occurrence of diabetes in India. Along with this risk factors, Black and Hokanson (2008), reported that a positive family history i.e., parent or sibling,
obesity (BMI > 25kg/m²) age->30 years, previously identified Impaired Fasting Glucose (IFG) are responsible for almost 40% risk of developing Type 2 diabetes over the next 5 years. Waugh & Grantt (2007) reported that the typical feature of Type 2 diabetes is resistance to insulin in insulin-targeting tissues, skeletal muscle, and fat tissues. Increased glucose productions by the liver and defective utilization of glucose by peripheral tissues are also added up to insulin resistance. The constant excessive stimulus for the production of insulin slowly reduced and islet beta-cell reserve get fatigued. This leads building up of sugar level in the blood as an alternative of accumulated in the body cells. Finally this leads withholding of energy to the cells.

Reported cases of Type 2 diabetes is severely increased due to rapid changes in the standard of living and imitation of lifestyle of western people. Along with lifestyle genetic inheritance bring the people at the brim of diabetes. Besides inactive lifestyle, highly junk food intakes, overweight add on to the risk. It is important and shocking news that India and China are the leading figure in the field of diabetes. Diabetes had broken the old age boundaries and appearing in younger age group. It is noticed in school going children. We need to take more co-operative and integrated treatment strategies to control Type 2 diabetes. The preventive steps will bring down early occurrence of disease symptoms and diagnosis of diabetes. Twenty first century is going to face the challenges. This knowledge need to push the health sector to take remedial measures.

Kaveeshuar and Corwall (2014) have revealed that India is facing possible outbreak of diabetes mellitus. Disease symptoms, complications and death due to diabetes claim the considerable health care load on the family members and
community. Anxiously, the image of diabetes is very visible with its complications among younger age group in India. The progressive re-settlement from rural to urban improved financial standards contributes to lifestyle changes and development of diabetes. This is considered as the most visible health problem in India.

William, Herrinton & diler Aslen (2011), describes, life span of the people is decreased due to diabetes and its complications. The complications of diabetes take an increasing proportion of the national health care expenditure. According to Fauci, Hauser, and Longo (2008), the most common long lasting health problems associated with diabetes are increased blood pressure, heart attack, cerebrovascular accidents and some minute vascular complications which affect the eyes, kidney, liver and nervous systems. Besides reflex disorders in the urinary bladder, reproductive systems and foot ulcers also contribute long term complications. When we depend only on drug therapy for the management, the initial responses to the present drug therapy will be good, but may lose their effectiveness in later and share significant side effects. Lucy, Attele and Yuan (2002), reported the observations of hypoglycemia, weight gain, weakness, fatigue, shortness of breath, nausea, dizziness, gas, bloating, diarrhea, and increase in LDL-cholesterol levels, lactic acidosis, kidney toxicity, secondary drug failure and liver toxicity during the course of drug therapy.

Another important thing we need to remember is that the estimated cost spending on diabetes is topped. According to Clement (2009), the cost had spent on 170 billion in 2007 for the treatment of diabetes which is expected to increase in the coming years. Absenteeism from the work place; poor work efficiency and task accomplishment where noticed among diabetic subjects. Hence the calculated financial loss is around 27 billion. Mortality was 280,000 due to diabetes people
above 20 years, are anticipated to have severe vision loss. Liver, kidney dysfunction and lower limb amputation are not far from this estimated rate. So diabetes is a debilitating disease, which should be prevented by introducing new treatment modalities and eliminating the painful shots of insulin and the fear of drug dependency.

Mohan, Sandeep, Deepa, Shah and Varghese (2007), noted that in our nation diabetes seems to be an important issue because the incidence of diabetes is reporting in younger age putting financial burden and giving more pressure in productive age. India has to shoulder the load of financial loss. Identification and early treatment of diabetes could help to prevent the long lasting problems of this chronic condition at its early stage. Sarvottam (2014) reported that overweight is a problem of all countries. Improved living standards contribute to overweight. Persistent deposition of fat tissue can cause variation in the metabolic process. After few years this overweight people end up with heart problems.

Yoga is an innovative and has become apparent branch of knowledge. It deals with body, mind and spirit. Yoga was very popular in western countries, but now it is introduced in our health care system. Yoga is practiced by people to cure chronic conditions. Studies highlighted that the effect of yoga will be slow but the impact of the therapy will be long lasting. It seems that present society and people have focused their attention to natural method of treatment modalities than the conventional methods. New generation is transformed in to an unnatural way of living. They are interested in fast food and artificial way of living. Urbanization and globalization had brought lot of changes in food habits and daily routines of the common people. Some of the negative transformations are negative thoughts, fast food culture, fear,
prejudice, hatred, despair, and depression. All these had brought short term and long
term impact on individuals. The main cause of diabetes and such lifestyle diseases are
the negative transformation of the society. It emphasizes the practice of yogic asanas,
pranayam, meditation and proper diet for curing all types of diabetes (Xavier,
2004).

Recognition of the global importance of yoga has put forward by Khalsa
(2004) and revealed that yoga is not only a spiritual practice but also a therapy used to
treat different diseases. Since 30 years, randomized control studies have been
conducted to confirm the importance of yoga in the main stream of treatment
modalities. There are studies in medical, psychological, respiratory, and
cardiovascular conditions. Depression, anxiety, increased blood pressure and asthma
are few conditions which benefited from yoga practice.

Büssing, Khalsa, Michalsen, Sherman & Telles (2012) reported the beneficial
effect of yoga on mental and physical aspects of health. He used review articles to
investigate on this issue. After a detailed review, the investigator recommended to
conduct evidence based studies. We carry out such studies in the health care sector.
The effective of yoga can be confirmed in managing certain type of health problems.
Nabar, Lele, Vaidya and Varthakavi (2014) conducted an interview with seventy one
year old client, an ayurvedic physician, visited in the endocrine outpatient department
section in Nair Hospital, Mumbai. The client was a known case of diabetes since 10
years and hypertension since 20 years. He was under regular treatment for diabetes,
Hypertension, Hyperlipidaemia and chest pain. He also included Ayurvedic
medication for Madhumeha. Chandraprabha and Arogyavardhini were the different
modalities used by the client. Along with this, he had juice with following herbs –
Aloe Vera, Triticum Aestivum, Momordica Charantia, Lagernira Siceraria and Allium Sativum once in a day. Moreover he had Abhyangam (whole body massage) with Narayan tail (foot massage). Daily he used to have Pranayama and Suryanamaskar for an hour since 10 years. His blood glucose level was under control which can be confirmed with his HbA1C results that is 5.9%. Creatine, blood urea nitrogen and triglycerides also maintaining the normal limit.

Researchers suggest that raw diet is best for controlling diabetes. Our diet has a direct bearing on our health and almost all illness are related to our diet. Zajic and Lenkaj (2005), supported with his result that the individuals who have been practicing the raw foods diet showed consistent improvement in physiological and psychological parameters. Koebnick and Garcia (2005), also reported that the effect of increased amount of uncooked vegetables and fruits showed low total cholesterol and triglyceride concentrations. Observations support that raw diet is best for diabetes management. Asharaf (2008) conducted a study to test the efficacy of raw diet and exercise to control Type 2 diabetes with 40 Type 2 diabetes mellitus cases. Physiological variables like blood sugar level, body weight, pulse rate, blood pressure and blood cholesterol and psychological variables like memory, hostility level, virtue, stress level, health awareness were assessed into normalcy. Study results confirm that combination of yoga and raw diet therapy was effective in controlling Type 2 diabetes mellitus Wong (1998), said that raw diet includes uncooked food items like fruits, vegetables, nuts, seeds, grains, legumes, dry fruits and young coconut milk etc. and are good for health. Initially the individuals will have mild to moderate reaction with raw diet. Some of the reactions are sensation of vomiting, headache and tendency to eat cooked food. This is seen in individuals who take meat, sugar, and caffeine on a regular basis previously.
Gopalan, Sastri and Balasubramanian (1989), describes food is the basic necessity of man. It is a mixture of different nutrients such as carbohydrate, protein, fat, vitamins and minerals. These nutrients are essential for growth, development and maintenance of good health throughout life. Fruits and vegetables are protective foods which provide vitamins and minerals required for growth and maintenance of health. Roots and tubers provide energy. Vegetables are low in fat and can be used liberally in low calorie diets for weight reduction. Nuts are a rich source of protein and fat and a good source of B –Vitamin and antioxidant vitamin E. They are a concentrated source of energy. The white flesh of coconut is rich in calories though not a very good source of protein. Almonds are an excellent source of vitamin E, an antioxidant. Coriander seed are recommended in hypertension. Fenugreek seeds reduce blood sugar, Garlic-Lowers blood cholesterol and blood pressure levels, Onion lower blood glucose levels and blood cholesterol levels. Tender Coconut Water rich in Potassium, ascorbic acid and many vitamins of the B group are present in coconut water. Apart from this, the water also contains traces of calcium, phosphorus and iron. Germinated pulses reduce the anti -nutritional and toxic factor in pulses. Dormant enzymes get activated and digestibility and availability of nutrients is improved. Minerals like calcium, zinc and iron are released from bound form. Sprouted pulses can be eaten raw; since germination improves taste and texture sprouted pulses can be added to salads. Continuous excessive boiling leads to damage in the structure and texture of food. Loss the heat labile nutrients such as B and C vitamins if the water is discarded. Water soluble nutrients may be lost into the water. Roasting denatures proteins reducing their availability. Fried foods are not easily digested. Repeated use of heated oils will have ill effects on health. Douglass and John (2007) reported that diet control has been a mainstay of the therapeutic regime used to treat diabetes mellitus. It is
generally recognized that overweight diabetic patients on oral anti-diabetic agents can sometimes have their oral agents discontinued if they lose weight and adhere closely to an anti-diabetic diet.

Enzymes are the power of life. They are living forces that conduct and direct every activity in our body. Enzymes digest or breakdown raw foods. More and more research suggests eating high enzyme food helps digestion. Eating an enzyme rich diet is thought to increase vitality and slow the aging process. According to Dr. Gabriel Cousens, enzymes can even help repair our DNA and RNA. One of the keys for easy weight loss is through the action of enzymes. For example, lipase, a fat splitting enzyme, is found in raw foods. Lipase helps body in digestion and fat burning for energy. Protease is another enzyme for keeping a healthy body. Protease split up protein into their component amino acid building blocks and helps eliminate toxins. Enzymes are heat sensitive and destroyed at temperature above 118 degrees. Charak Samhita supports the use of nutritious food. The important factor which leads for the healthy growing of individuals is nutritious diet. A Diet without adequate nutrients leads to different types of health problems. The food items promote harmony among the body system and helps in retaining equanimity in the body systems. Charka states that small quantity of food which is easily digestible and good nutritious food items may not be needed for meeting the energy requirement after attaining the satity level. The items which are difficult to digest should be avoided. Extra food can harm the body.

Lele (2012) reported that Ayurveda explains three types of ‘Ahar’ or food habits – ‘Satwik’, ‘Rajasik’ and ‘Tamasik’. Rishis preferred ‘Satwik ahar’ which consist of ‘Kanda’, ‘Moola’, ‘Phala’ (vegetables and fruits) and their life span was
hundred years. In today’s circumstances, this consists of a 1300 caloric diet with high fiber, little amount of fat, small amount of sodium, moderately high potassium & minerals and abundance of antioxidants. This type of food gives the least oxidative stress. Extreme level of oxidative stress is the main seen in common health disorders and ageing process.

Agren, Tormala, Nenonen and Hanninen (1995) conducted a comparative study between the individuals who take raw diet for many years and those who take mixed diet. The vegetable diet contains more of unsaturated and polysaturated and low saturated fatty acids. The proportion of n-3 fatty acids to n-6 fatty acids was only about half of the group than who took mixed diet. The study findings show, vegetarian food has less effect on the ratio of oleic and arachidonic acid where, the level of n-3 fatty acids are very less with extended intake of high linoleic and oleic acid components of the food.

Department of Clinical Nutrition, University of Kuopio, Finland (1995) investigated the biochemical interaction of living food (raw diet) among twenty females in Finnish. This was conducted by survey method. Vitamin C, E and beta-carotene levels were compared with control subjects. The vegetarian raw food group had elevated vitamin C, E, copper, beta-carotene and decreased intake of selenium than the control group. Their intake was parallel with recommended nutrition intake of US. Vitamin C 305%, Vitamin A 247%, vitamin C 313%, copper 120%, selenium 49%. This reveals that vegetarian raw food supplements more antioxidants than the non vegetarian subjects. Raw food is better in providing antioxidant than cooked diet.
American diabetic association recommends a regular physical activity program 150 min/week of moderate aerobic physical activity. It will increase insulin sensitivity and improves well-being. One needs to give up sedentary lifestyle and modify one’s diet as it restores the body to good health and has long lasting results. To support this concept, (Kooperman & Ackerman, 2006) reported that the yoga programme practiced 40 minutes for 40 days among Type 2 diabetes patients showed a remarkable change in FBS levels and lung capacity. The yoga asana is very effective in controlling blood glucose among Type 2 diabetes patients.

Type 2 diabetes is a lifestyle disease and it can be efficiently managed with lifestyle modification and Yoga. Mandlik, and Chadratreya (2006) said that alternate nostril breathing has calming effect on nervous system. Yoga practice especially asanas are effective in the management of diabetes. Internal organs are stretched well during yoga practice. This leads to better efficiency of internal organs and its secretions. These ‘Asanas’ have positive effect on pancreas and also insulin functioning. Malhotra, Singh, Tandon, and Sharma (2005) reported that 20 noninsulin dependent subjects belong to 30-60 years old participated in yoga group showed reduced waist to hip ratio and a decrease in fasting blood glucose. The changes noticed in intervention group reveal that yoga asana are very effective in managing Type 2 diabetes.

1.2 NEED AND SIGNIFICANCE OF THE STUDY

Frankb. Hu, (2011) reported that the dynamics of the diabetes epidemic are changing rapidly. Once a disease of the West, type 2 diabetes has now spread to every country in the world. Once “a disease of affluence,” it is now increasingly common among the poor. Once an adult-onset disease almost unheard of in children,
diabetes is a global public health crisis that threatens the economies of all nations, particularly developing countries. Rapid urbanization, nutrition transition, and increasingly sedentary lifestyles, made worldwide rise in diabetes. High intake of refined carbohydrates (e.g., white rice); and dramatically decreased physical activity levels, Poor nutrition in utero and in early life combined with over nutrition in later life also play a role in Asia’s diabetes epidemic. Diabetes have a far reaching and devastating physical, social and economic consequences such as amputation, vision loss, and end stage kidney diseases. This is also a leading point of mortality from disease, primarily due to increased level of heart problems, stroke, peripheral vascular conditions among diabetic patients of the high rate of cardiovascular disease, stroke, and peripheral vascular disease among people with diabetes. Hospitalizations among diabetic patients are 2.4 times greater for adults and 5.3 times greater for children among the general population (CDC 2011).

Anjana et al. (2011) says that lot of studies had conducted to find out the incidence and prevalence of diabetes in urban settings; but very few studies are conducted in rural area. Anjana et al. also have expressed their concern on inadequate coverage of Indian rural population in various national studies. Unfavorable modification of lifestyle and dietary habits that are associated with urbanization are believed to be the most important factor for the development of diabetes. The prevalence of diabetes is approximately twice in urban areas than in rural population.

Patro, Adhya, Pal, Mishra and Acharya (2014) The prevalence of Diabetes Mellitus is 2.4% among adults in rural areas and 4-11.6 % in urban dwellers. In recent years increasingly sedentary life styles and poor eating habits have contributed to the simultaneous escalation of diabetes and obesity worldwide. Dietary
transition coupled with inactivity, taking junk food and carbonated drinks appear to have contributed to the high prevalence rate of obesity of the urban population. The dietary practices and lifestyle factors responsible for failure to achieve glycemic control in diabetic patients. The above findings alarm the need to provide a better dietary plan and lifestyle modification to the diabetic patients.

Danaei et al. (2011) reported that along with population growth, hyperglycemia and ageing diabetes are escalating worldwide. According to the observation of the investigator every 4th person in a Christian nuns community are having either prediabetes or diabetes. Public and health care team need to be vigilant to take remedial measures to tackle situation and prevent its complications.

Diabetes mellitus is an economic burden for the society and adversely affects the quality of life of people. Each and every case of disease cannot be cured by drugs. The number of diseases which drugs fail to cure is increasing. Drugs have often side effects which are bad for health and in their specific action against a particular disease which give rise to many unfavorable reactions in the systems of body (Joshi, 2005). Current pharmacological management has some side effects and associated problems. WHO recommends diet and exercise to control diabetes one needs to give up sedentary lifestyle to bring down the occurrence of diabetes. Diabetes Prevention Program Research Group (2002) conducted a study to find out whether lifestyle intervention or metformin are more effective in reducing diabetes occurrence...

Irrespective of dietary management and yoga observations support that raw diet is best for diabetes management. Asharaf (2008) conducted a study to test the efficacy of raw diet and exercise to control Type 2 diabetes with 40 Type 2 diabetes mellitus cases. Physiological variables like blood sugar level, body weight, pulse rate,
blood pressure and blood cholesterol and psychological variables like memory, hostility level, virtue, stress level, health awareness were assessed into normalcy. Study results confirm that combination of yoga and raw diet therapy was effective in controlling Type 2 diabetes mellitus. Similar observation cited by Corinna & Garcia. (2005) reported that high dietary intake of raw vegetables and fruits showed low plasma total cholesterol and triglyceride concentrations. Both studies support raw diet and yoga is beneficial in controlling diabetes and related problems. But studies are limited in this area. More attention is needed on the unseen horizon of the topic, like physiological and psychological variables.

Montonen, et al. (2005), Identified and reported that higher consumption of fruits and vegetables, dietary pattern score was associated with a reduced risk of type 2 diabetes. In contrast, the consumption of butter, potatoes, and whole milk pattern score was associated with an increased risk of type 2 diabetes. In light of these results, Type 2 diabetes can be reduced by changing dietary patterns. Asif (2014) also reported Minor changes in lifestyle can greatly reduce the chances of getting diabetes. Therefore, in order to prevent this condition, action should be taken in-lifestyle and dietary habits.

The bio-psycho-social model’s fundamental assumption is that the health and illness are the outcome of the interplay of biological, psychological and social factors, (Engel, 1977). Physiological and psychological factors are the important components to be focused while managing a disease condition. Here comes the integration of the patient’s mind, body and spirit in the healing process. Richard and Holt (2004) said that patients are encouraged to maintain a positive attitude in integrating the mind, body and spirit through yoga, raw diet, physical activity and spirituality. Healthy
lifestyle and mindset can have a positive impact on how people deal with their
diagnosis and treatment. Hence the investigator has undertaken this study to
investigate the efficacy of raw diet and yoga on physiological and psychological
variables like sleep, mental health, and quality of life of Type 2 diabetes in different
stages of disease process. This study will have important implications for targeting
appropriate therapy to patients in each stage of disease process.

Though the science of medicine has advanced a lot, it is a need to bring new
concepts and treatment modalities for general public. Life style changes will bring a
lasting effect in controlling the diabetes and also can provide cost effective
management for the poorer section of the society. The result of this present study will
help the general public and health care community to incorporate new treatment
modalities into daily routines of diabetic care.

1.3 PROBLEM STATEMENT

Efficacy of Raw Diet and Yoga on Type 2 Diabetes in different stages of
disease process.

1.4 OBJECTIVES

1. To find out the effect of raw diet and yoga on various physiological variables like
   blood sugar level, blood cholesterol, pulse rate, blood pressure, body weight,
   abdominal girth and BMI of Prediabetic experimental and control group before and
   after raw diet and yoga therapy.

2. To find out the effect of raw diet and yoga in physiological variables like blood sugar
   level, HbA1c,blood cholesterol, pulse rate, blood pressure, body weight, abdominal
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girth and BMI of Type 2 diabetes experimental and control group before and after raw diet and yoga therapy.

3. To find out the effect of raw diet and yoga on sleep quality of Prediabetic experimental and control group before and after raw diet and yoga therapy.

4. To find out the effect of raw diet and yoga on sleep quality of Type 2 diabetes experimental and control group before and after raw diet and yoga therapy.

5. To find out the effect of raw diet and yoga on mental health, of Prediabetic experimental and control group before and after raw diet and yoga therapy.

6. To find out the effect of raw diet and yoga on mental health, of Type 2 diabetes experimental and control group before and after raw diet and yoga therapy.

7. To find out the effect of raw diet and yoga on quality of life of Prediabetic experimental and control group before and after raw diet and yoga therapy.

8. To find out the effect of raw diet and yoga on the quality of life of Type 2 diabetes experimental and control group before and after raw diet and yoga therapy.

9. To evaluate the effect of raw diet and yoga on various physiological variables like blood sugar level, blood cholesterol, pulse rate, blood pressure, body weight, abdominal girth and BMI of Prediabetic experimental and control group before, during and after raw diet and yoga therapy.

10. To evaluate the effect of raw diet and yoga in physiological variables like blood sugar level, blood cholesterol, pulse rate, blood pressure, body weight, abdominal girth and BMI of Type 2 diabetes experimental and control group before, during and after raw diet and yoga therapy.

11. To compare the effect of raw diet and yoga on the various physiological variables, sleep, quality of life and mental health between Prediabetic and Type 2 diabetes experimental groups before and after raw diet and yoga therapy.
1.5 HYPOTHESES

1. There will be no significant difference in the physiological variables like blood sugar level, blood cholesterol, pulse rate, blood pressure, body weight, abdominal girth and BMI of Prediabetic experimental and control group before and after raw diet and yoga therapy.

2. There will be no significant difference in the physiological variables like blood sugar level, HbA1c, blood cholesterol, pulse rate, blood pressure, body weight, abdominal girth and BMI of Type 2 diabetes experimental and control group before and after raw diet and yoga therapy.

3. There will be no significant difference in the sleep quality of Prediabetic experimental and control group before and after raw diet and yoga therapy.

4. There will be no significant difference in the sleep quality of Type 2 diabetes experimental and control group before and after raw diet and yoga therapy.

5. There will be no significant difference in the mental health of Prediabetic experimental and control group before and after raw diet and yoga therapy.

6. There will be no significant difference in the mental health of Type 2 diabetes experimental and control group before and after raw diet and yoga therapy.

7. There will be no significant difference in the quality of life of Prediabetic experimental and control group before and after raw diet and yoga therapy.

8. There will be no significant difference in the quality of life of Type 2 diabetes experimental and control group before and after raw diet and yoga therapy.

9. There will be no significant difference in the physiological variables of Prediabetic experimental and control group before, during and after raw diet and yoga therapy.
10. There will be no significant difference in the physiological variables of Type 2 diabetes experimental and control group before, during and after raw diet and yoga therapy.

11. There will be no significant difference in the various physiological variables, sleep, quality of life and mental health between Prediabetic and Type 2 diabetes experimental groups before and after raw diet and yoga therapy.

1.6 OPERATIONAL DEFINITIONS

Efficacy: In this study efficacy refers to the extent to which combination of yoga and raw diet has achieved in reducing physiological values and improving psychological values such as sleep, QOL, and mental Health which were measured by pretest post test mean scores.

Raw Diet Therapy: It is a therapeutic intervention in which unprocessed and uncooked plant foods, such as fresh fruits, vegetables, seeds, nuts, grains, and dried fruits are replaced for normal diet to the patients. menu will be with 100% unheated foods.

Yoga: In this study yoga refers to the demonstration of different asanas which gives the discipline of the mind, senses and physical body. These asanas performed daily for 30 minutes morning and evening for 40days which include different asanas like Halasana, Bhadrasana, Bugangasana, Dhanurasana, Matsyanthrasana, Viparithakarani, Pachimudhasana, Ardhamalsendhrasana, Ardhahalasana, Chakrasana, Salabhasana, Vakrasana, Naukasana, Vajrasana, Yogamudhra, Tree Pose, Sarvangasana, And Savasana.
**Control type 2 diabetes:** In this study Control type 2 diabetes refers to the extent to which the intervention brings down fasting blood sugar value less than the preinterventional period which were measured by post test fasting blood sugar mean score value.

**Type 2 diabetes:** It refers to increased fasting blood sugar level more than 126 mg/dl from any of several causes, is the most prominent disease related to failure of blood sugar regulation.

**Different stages:** It is the classification of patients into different groups based on their fasting blood sugar values, and severity of the condition based on symptoms.

**Stage 1:** Prediabetic patients (FBS=100-125 mg/dl, obesity, history of dm in first degree relatives, weakness, fatigue).

**Stage 2:** Type 2 diabetes patients without complications (FBS>126 mg/dl, frequent urination, excessive thirst, excessive hunger, weakness, and fatigue).

**Adult Christian nuns:** Christian nuns between the age of 30-60 years who are diagnosed with pre diabetes and Type 2 diabetes and staying together like a family, praying together and working for the people.

### 1.7 VARIABLES

**Independent Variable:** Yoga and Raw diet therapy.

**Dependent Variable:** Physiological variables like Fasting blood sugar level, blood cholesterol, HbA1c, pulse rate, blood pressure, body weight, abdominal girth, BMI, and psychological variables like sleep, mental health and quality of life.