CHAPTER I
INTRODUCTION

The term “diabetes mellitus” is derived from the Greek word, “diabetes” meaning “to go through” or a siphon and the word “mellitus” is derived from the Latin word “mel” meaning honey describing the sweet odour of urine. The actual Evidence of diabetes was brought by an Egyptian scientist Papyrus Ebers in 1500 BC. The word “Diabetes” is a Greek word which Means “to run through.” Charaka and sushrutha described ‘madhumeha’ in 5th century in which a person passes urine, which resembles honey and strongly attracts ants. They also found two forms of diabetes, one affecting the older and fatter people and the other than people who did not live long.

Diabetes is one of the major and serious health problems throughout the world. Incidence is much higher at present than it had been in the past. Although the disease is on the rise in both developed and developing countries, Diabetes is far greater a problem in the latter, the extreme cases affect 30-40% of adults as against 2-4% in the developed countries.

Diabetes Mellitus is one of the multi-system diseases which is related to abnormal insulin secretion, impaired insulin utilisation or both. Recent statistics depicts, in the United States 17 million people or 62% of the population is estimated to occur Diabetes Mellitus. About one-third of the patients with Diabetes Mellitus are not diagnosed and those individuals are unaware of their disease that they have. Diabetes Mellitus is the fifth leading cause of deaths in the United states with 2,10,000 deaths per annum. About 20% of people above 65 years age have diabetes. Diabetes Mellitus is a leading cause of Coronary Artery disease, stroke and blindness.

Diabetes is an increasing public health problem especially in India. It is predicted that by the year 2025, the maximum prevalence of diabetes would be in India and every 4th diabetic in the world will be an Indian. In a period of 5 years, the prevalence has increased from 8.2% to 11.6% in urban India. The study also showed
that the prevalence of Diabetes in urbanizing rural population was found to be midway between rural and urban populations\textsuperscript{6}.

“According to WHO, Diabetes Mellitus is an iceberg disease and its prevalence in adults is around 4% worldwide, i.e., over 143 million persons are now affected. It is projected that the disease prevalence will be 5.4\% by the year 2025, with global diabetic population reaching 300 million out of which 77\% of the global burden of disease is projected to occur in the developing countries\textsuperscript{7}.”

\textbf{Table No 1: Estimation of clients with Diabetes between 2000 - 2030}

<table>
<thead>
<tr>
<th>Country</th>
<th>People with diabetes (In Million) 2000</th>
<th>People with diabetes (In Million) 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>31.7</td>
<td>79.4</td>
</tr>
<tr>
<td>China</td>
<td>20.8</td>
<td>42.3</td>
</tr>
<tr>
<td>US</td>
<td>17.7</td>
<td>30.3</td>
</tr>
<tr>
<td>Indonesia</td>
<td>8.4</td>
<td>21.3</td>
</tr>
<tr>
<td>Japan</td>
<td>6.8</td>
<td>8.9</td>
</tr>
<tr>
<td>Pakistan</td>
<td>5.2</td>
<td>13.9</td>
</tr>
<tr>
<td>Russia</td>
<td>4.6</td>
<td>11.1</td>
</tr>
<tr>
<td>Brazil</td>
<td>4.6</td>
<td>8.9</td>
</tr>
<tr>
<td>Italy</td>
<td>4.3</td>
<td>7.8</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>3.2</td>
<td>6.7</td>
</tr>
</tbody>
</table>

According to World Health Organization Report, the “top three” countries are the same as those identified for 1995, India, China and United Nations.\textsuperscript{6}

In India, the level of awareness about diabetes and its consequences remains pathetically low. For many people, diabetes means it is just an increase in blood sugar level, which has to be controlled by a sugar free diet and some medications. Not many are aware of the serious implications of the disease\textsuperscript{8}.

“Self management of DM is a process of development of knowledge or awareness by learning to survive with the complex nature of the diabetes in a social
context. Because the vast majority of routine care in diabetes is handled by patients or families, there is an important need for reliable and valid measures for self management of diabetes. There are seven essential self management behaviors in people with diabetes which predict good outcomes. These are healthy eating, being physically active, monitoring of blood sugar, compliant with medications, good problem-solving skills, healthy coping skills and risk-reduction behaviors.

“Self Management is defined as a set of skilled behaviours engaged in to manage one’s own illness. This emphasizes the responsibility and role of individual in managing the disease.”

Hospitalization for a diabetic patient works out to be very costly and may be even higher for patients with diabetes related complications. The high prevalence of diabetes in India poses a huge threat to the Indian economy. Low income, increased health care costs, complications to different organs and the psychological reaction in adjusting to new requirements of health care routine can cause stress in adopting a diabetes adjusted quality of life.

A Research study was conducted on diabetes at Delhi, found that around 2% of the 12000 people surveyed in Indian villages were found to be diabetic and It was an alarming observation that, half of them were not knew that, they have diabetes.

“Times of India, a National News Paper reported that one among the nine diabetic patients in the world is an Indian and by 2025, it is assumed that every 5th diabetic patient in the world will be an Indian. Diabetes is one of the most economically burdensome chronic diseases of our times.”

A Descriptive survey study conducted in Tamil nadu, found out that rural areas in India had a significantly higher incidence of diabetes. These figures show that diabetes mellitus is more prevalent in rural areas. Recent studies have reported that migrant Indians living in different parts of the world shows a much higher prevalence of diabetes than the host population of those countries. Even in the region wise prevalence of diabetes studies conducted in India among rural subjects the prevalence of diabetes in India was found to be more.
A casestudy conducted in Germany on intensive insulin for the diabetic patients and found that tight Glycemic control achieved with intensive insulin regimens can reduce the risk of developing retinopathy, nephropathy or neuropathy in patients with diabetes. It was found that intensive insulin regimens could achieve strict metabolic control in patients with diabetes mellitus and offers the best possible outcomes with regard to complications\textsuperscript{17}.

An experimental study was conducted in US to find out the relationship between Diabetes Mellitus and its clinical complications. The study provided the data on a new mouse model in which atherosclerosis irritation was accelerated in diabetic mice and was reduced by insulin therapy\textsuperscript{18}.

For effective management of diabetes, patients must be actively involved in their care: this requires performance of many complex self management behaviours including lifestyle modifications such as dietary control, regular exercise and psychosocial coping skills and medical self management such as medication use and self-monitoring of blood glucose. Importantly, adequate self management needs to persist over time if it is going to reduce complications and prolong life. The increase in severity of diabetes every year has been linked to patient’s lack of knowledge and practice of proper self management management of Diabetes.\textsuperscript{19}

**NEED FOR THE STUDY**

Thirteen percent of population in Vadodara is suffering from heart disease risk due to sedentary lifestyle. This is what a survey conducted by Indus Health plus in association with Sterling Add Life India Limited has indicated. The Indus Abnormality Report released a day before World Heart Day which will be observed on Tuesday indicates that both male and female are at equal risk of cardiovascular diseases (CVDs).

It states that 21 percent of the total population in Baroda are at risk of CVDs. The sample size for the study was 14,100 people who underwent preventive health check-ups between January 2014 and August 2015. "16 percent of male and 18 percent of female who underwent the diagnostic test were obese and didn't exercise
regularly. This is the leading factor for aggravating heart ailments between the age group of 30 and 40 years”.

The abnormality report clearly states that out of 17 per cent of obesity cases, 7.8 per cent of them were from the age group of 25 to 40 years. Only 5 to 7% of the population followed a regular healthy regime. The increasing prevalence of diseases like hypertension, dyslipidemia, diabetes and obesity has led to an increase in the burden of cardiovascular diseases in Baroda. Pollution, smoking and high stress level with sedentary lifestyle are contributing factors for heart diseases²⁰.

Creating awareness on all aspects of diabetes is fundamental need. This can be achieved through creating health awareness among general public. This may enable those with initial symptoms and those at risk to adopt remedial and preventive measures. The ideal treatment for diabetes would allow the patient to lead a completely normal life to remain not only symptom free but in good health and to avoid the complications associated with long term diabetes²¹.

Diabetes requires a lifelong management plan, and persons with diabetes have a central role in this plan. Lifestyle modification is an opportunity for diabetics to take charge of their health. A study conducted related to adherence/non adherence to diet restriction, 17 % stated frustration, 66 % had difficulty at social gatherings to recommend treatment, 645 of men and 325 of women patients were non adherent, and they cited lack of time or being lazy. The study also revealed that not all those who seek medical help follow advice and those who fail to adhere to regimen always find excuses²².

Diabetes, i.e., higher glucose level is a slow, silent, stealthy and lethal killer. It does such an intensive and extensive damage to our body than any other ailment. The population in India has an increased susceptibility to diabetes mellitus. In India 30 million people are affected with diabetes mellitus and it is expected to be 57 million by 2025²³.

Diabetes education is important but it must be transferred to action or self management activities to fully benefit the patient. Self management activities refer to
behaviours such as following a diet plan, avoiding high fat foods, increased exercise, self-glucose monitoring, and foot care. Decreasing the patient’s glycosylated haemoglobin level may be the ultimate goal of diabetes self-management but it cannot be the only objective in the care of a patient. Changes in self-management activities should also be evaluated for progress toward behavioural change\textsuperscript{24}.

Effective and good diabetic management helps to prevent or delay many of the complications. Effective management includes lifestyle measures such as a healthy diet, physical activity, and foot care, eye care, smoking cessation, avoiding alcohol, monitoring blood sugar level, and managing medication. Helping clients with DM to acquire the knowledge and skills to self manage their own condition is crucial to leading a full and healthy life style\textsuperscript{25}. Ageing is associated with the greater prevalence of type 2 diabetes in all regions. Women showed a higher prevalence in the highland and coastal areas and men in the urban and midland areas\textsuperscript{26}.

Self management is the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health and well being. Self management in diabetes is crucial. It has been claimed that as much as 98% of diabetes care is self management. Self management in diabetes falls mostly on the patients and their families. It is essential that individuals with diabetes adhere to self management, to prevent the complications associated with diabetes\textsuperscript{27}.

Diabetes self-management education is the process of teaching individuals to manage their diabetes and has been considered an important part of the clinical management of individuals. The goals of self-management education are to optimise metabolic control, prevent acute and chronic complications and optimise quality of life, while keeping costs acceptable\textsuperscript{28}.

Lifestyle modification can be a very effective way to keep diabetes in control. Improved blood glucose control can slow the progression of long term complications. Multiple small changes can lead to improvements in diabetes control, including a decreased need for medication. Diabetes requires a lifelong management plan, and persons with diabetes have a central role in this plan. Therefore, it is important to
learn as much as possible about diabetes and to take an active role in making decisions about health care and treatment.

Lifestyle related risk factors play an important role. Some of these risk factors like dietary choices, smoking, alcohol consumption, over weight and sedentary lifestyle are modifiable. Studies have shown that these factors, if effectively controlled can lead to reduction in the risk of developing further complications. Thus a study was undertaken to assess the effectiveness of nutrition counselling and education programme on serum biochemical parameters, for delaying of secondary complications in the diabetic subject. Result of the study showed a significant reduction in fasting blood sugar, decreased in their weight, an altered lipid profile towards the favourable side. Thus the health education programme was effective and thereby helps in arresting or delaying the secondary complications of diabetes.

The American Diabetes Association recommends assessment of self-management skills and knowledge of diabetes at least annually and the provision of encouragement of continuing diabetes education.

A study conducted in US stated that diabetes is a chronic and serious disease which cannot be neglected and self-management activities will control their diabetes and reduce the likelihood of long-term complications. If self-management is to be effective, diabetic patients must have knowledge and be motivated to look after themselves and take appropriate action when complications are present. A great deal depends on the patient education.

A study conducted to evaluate the health and utilisation outcomes of a 6-week community-based programme for patients with chronic diseases like heart disease, lung disease or Type 2 diabetes about the self-management and concluded that the intervention group demonstrated improved health status, health behaviour, self-efficacy as well as fewer casualty visits comparing to the control group.

A survey study was conducted in Chandigarh about knowledge and practices regarding diet, care of foot, complication of diabetes and medication. This study has
concluded that there is a need to reorient and motivate health personnel in educating diabetics about self management\textsuperscript{34}.

An evaluative study of nurse directed intervention for improvement of quality of life and the health promoting behaviour conducted among diabetic adults in selected hospitals of Goa and Mangalore concluded that self management practiced by patients was poor\textsuperscript{35}.

One of the most disabling complications of DM is Diabetic Foot Ulcers (DFU) which affects 15-25\% of diabetic patients and may lead to gangrene, infection and/or foot amputation. These complications can lead to severe adverse effects including a high financial burden, physical disability, depression, low quality of life and high mortality. Since effective long term treatment of DFU is difficult, costly and time consuming and since ulcers often reoccur even after healing, their prevention is very important. Proper daily foot care is an essential, low cost and effective part of DFU prevention\textsuperscript{36}.

Performing daily foot care routines enables diabetic patients to detect foot abnormalities and injuries earlier and as a result to reduce or even prevent the risk of foot ulceration effectively. However, many diabetic patients do not perform daily foot care appropriately, for instance, failing to conduct a daily foot self-inspection, walking barefoot or wearing improper footwear, improperly trimming their toenails, or using unsafe water for washing their feet\textsuperscript{36}.

“A study has been conducted on knowledge and self management practices of diabetes in Chandigarh. It has been found that, out of 60 subjects none of the patients on insulin injection knew about self administration of Insulin therapy. Knowledge on diabetic complications was partial. The Researcher concluded that there is a need for repeated Health education to enhance the knowledge to diabetic patients about self management of Diabetes\textsuperscript{37}.”

A study was conducted on “Diabetes self management knowledge among outpatients at a Veterans Affairs Medical Centre” in Chillicothe on five hundred subjects to assess their knowledge regarding diabetic care including proper use of
insulin, adverse effects of insulin and its complications. Result of the study indicated that a majority of the patient’s with insufficient knowledge contributed to their inability to perform appropriate self management practice.

An evaluatory study was conducted to assess the effectiveness of STP on knowledge and practice regarding Self Administration of insulin among insulin requiring for diabetic patients. The research depicts that there was a significant development in knowledge and skill regarding self-administration of insulin after the administration of teachings. It was concluded that teaching programs are effective and recommended that, such studies would be conducted on a larger scale for making a more valid generalisation.

Effective control of diabetes is worthwhile. Diabetes complications are preventable. Long and healthy life is possible despite diabetes. Education is a process of delivering self control to motivate self management so that they can look after themselves without being dependent on trained health professionals and thereby reduce the complications and burden on family, society and government.

Self management teaching should be part of a regular management plan for patients with diabetes. It provides the information regarding an individual's dynamic diabetic status. This information can help with the appropriate scheduling of food, activity, and medication. Lack of regular knowledge on DM predicts hospitalization for diabetes-related complications. Self management teaching is an essential tool for people with diabetes who are taking treatment or for those who experience fluctuations in their blood glucose levels, especially hypoglycaemia.

In patients diagnosed with diabetes mellitus (DM), the therapeutic focus is on preventing complications caused by hyperglycemia. In the United States, 57.9% of patients with diabetes have one or more diabetes-related complications and 14.3% have three or more. Strict control of glycaemia within the established recommended values is the primary method for reducing the development and progression of many complications associated with micro vascular effects of diabetes (eg, retinopathy, nephropathy, and neuropathy), while aggressive treatment of dyslipidemia and
hypertension further decreases the cardiovascular complications associated macrovascular effects\textsuperscript{42}.

**STATEMENT OF THE PROBLEM:**

"Effectiveness of self-management training on type 2 Diabetes mellitus - a community based study"

**AIM OF THE STUDY:**

Aim of the study was to evaluate the effectiveness of self management training programme on type II diabetes mellitus among diabetic patients in terms of knowledge, attitude and Practice.

**OBJECTIVES OF THE STUDY:**

1. Assess the existing level of knowledge, attitude & Practice regarding self management of type 2 diabetic patients among experimental and control group.
2. Evaluate the effectiveness of self management training program on type 2 diabetes mellitus in terms of knowledge, attitude & Practice among experimental and control group.
3. Find out the association between the Pre test knowledge, attitude & Practice scores with their selected socio-demographic variables.
4. Correlate the post test knowledge scores with post test attitude scores & Post test practice scores regarding self management of type 2 diabetes mellitus.
OPERATIONAL DEFINITIONS:

• **Effectiveness**: Refers to significant difference between Pre test and post test scores of knowledge, Attitude and Practice on Type 2 Diabetes mellitus among experimental and control group.

• **Self-management**: Self-management is defined as a set of skilled behaviours engaged to manage, monitor and follow up. This emphasizes the responsibility and role of the individual in managing the diabetes in terms of knowledge attitude and Practice.

• **Self-Management Training**: Self management training is about giving training to people living with diabetes to know the effectiveness of self management on diabetic diet, exercise, diabetic foot care, SMBG & administration of insulin.

• **Type 2 diabetes**: Type 2 Diabetes mellitus (DM), is a insulin resistance, commonly referred as diabetes, is a group of metabolic diseases in which there are high blood sugar levels over a prolonged period.

• **Community**: A community is a social unit of any size that shares common values. Community involve for the present study are Waghodia Taluka of Vadodara district.

HYPOTHESES OF THE STUDY: -

• **H1**: Mean post-test knowledge, attitude and practice score of patients in experimental group will be significantly higher than the mean post-test knowledge attitude and practice score of patients in Control group.

• **H2**: There will be significant association between pre test knowledge, attitude & practice score with their selected socio demographic variables.

• **H3**: There will be a significant correlation between post test knowledge score and post test attitude score of experimental group regarding self management of type 2 diabetes mellitus.

• **H4**: There will be a significant correlation between post test knowledge score and post test practice score of experimental group regarding self management of type 2 diabetes mellitus.
VARIABLES:
2. Independent variable: - Self management training programme on self management of type 2 diabetic mellitus among selected rural area.
3. Demographic variable:- The demographic variables are age, Gender, demographic area, family income, educational status, occupation, family history of diabetes, duration of illness, participation in any other diabetic self management practice training programme.

DELIMITATIONS: -
- Patients who diagnosed as diabetic and taking treatment for the same.
- Who are present at home during the period of data collection.
- Who are able to understand and respond.
- Knowledge, attitude and practice of patients are assessed through structured questionnaire, rating scale and check list.

CONCEPTUAL FRAME WORK

Conceptual frame works are interrelated concepts (or) abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme. The conceptual frame work for this study is based on self care theory by Dorothy Orem which has the following components.

1. Theory of self care
2. Theory of self care deficit
3. Theory of nursingsystem

1. Theory of self care

This theory includes
- **Self care** – Practice of activities that individual initiates & performs on their own behalf in maintaining life, health & wellbeing.
- **Self care agency** – It is the human ability for engaging in self care.
- **Therapeutic self care demand** – Actions to be performed to meet self care requisites using valid methods.
- **Self care requisites** – Actions directed towards provision of self care. 3 categories of self care requisites are
  - a. Universal self care requisites
  - b. Developmental self care requisites
  - c. Health deviation self care requisites

2. **Theory of self care deficit**

   Self care deficit specifies when nursing is needed. Nursing is required when an adult is incapable or limited in the provision of continuous effective self care.

3. **Theory of nursing systems**

   Describes how the patient’s self care needs will be met by the nurse, the patient or both. There are 3 classifications of nursing system to meet the self care requisites of the patient. They are
   - a. Wholly compensatory system
   - b. Partly compensatory system
   - c. Supportive educative system”
CONCEPTUAL FRAMEWORK – OREM’S SELF CARE THEORY

Self care agency

Self care ability fully developed

self care demand

- Inadequate knowledge on diet, exercise, medication, monitoring & follow up of self management of diabetes mellitus.
- Inability to practicing self management on monitor blood sugar level, Self administration of insulin & foot care among diabetes mellitus patients.

Assessment of existing level of knowledge, attitude & Practice through self prepared interview questionnaire/Likert scale/practice checklist for experimental & control group.

Nursing intervention educative – supportive nursing system

Modification of better self management practice through self management training in terms of knowledge, attitude & practice.

Self management training for experimental group.

Individual/Group Instruction

- Developing knowledge, Modification in the attitude, Developing ability to practice self management on diabetes mellitus.

Assessment of self management training in terms of gain in knowledge, attitude & Practice scores among experimental & control group.

- Age group
- Gender
- Marital status
- Area of domicile
- Educational status
- occupation
- Monthly family income
- Life style
- Self assessment
- Marital status
- Body mass index
In the present study,

**Self care**: Refers to the activities independently performed by type – 2 diabetic patients

**Self care agency**: Refers to the abilities of type 2 diabetes mellitus patients to practice self management on diabetes mellitus as the patient is having lack of information on self care of diabetes mellitus that could be assessed by pre-test. The practicing ability of the patients is demonstrated by pre-test to assess the need of self care requisites. The determinate of the self care agency are demographic variables like age, sex, education status, occupation, monthly income, religion, marital status, and place of residency, lifestyle, family history of diabetes, co morbid disease, and body mass index.

**Therapeutic self care demand**: Refers to the need of knowledge on self care of diabetes mellitus to maintain better Glycemic practice. The knowledge regarding self management of diabetes mellitus is assessed by a cafeteria questionnaire and practice of self care of diabetes mellitus was assessed by check list before training session.

**Self care requisites**: Refers to the self care needs of type 2 diabetes mellitus patients to learn live with effects of disease that is practicing self care of diabetes mellitus.

**Self care deficit**: Refers to lack of knowledge, negative attitude & poor practice regarding self monitoring of blood glucose level & the role of researcher is to improve the knowledge, develop positive attitude & good practice onSelf management of diabetes mellitus.

**Nursing System**: Refers to the services by the researcher to the clients in assessing and imparting knowledge on diabetic self management, the clients fall under the category of supportive and educative system of nursing agency. Here knowledge on diabetes mellitus was imparted through self management training program by assessing the Knowledge, Attitude and Practice. Also the researcher will get the feedback which in turn helps to assess effectiveness of self management training program in improving knowledge, attitude and practice of Self management of diabetes mellitus.