ASSESSING THE LEVEL OF EMPOWERMENT TO MANAGE CARE AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS IN TRIVANDRUM DISTRICT, KERALA

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DECLARATION

I hereby declare that this dissertation titled "**Assessing the level of empowerment to manage care among patients with type 2 diabetes mellitus in Trivandrum district, Kerala"** is the bonafide record of my original field research. It has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

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CERTIFICATE

Certified that the dissertation entitled **"Assessing the level of empowerment to manage care among patients with type 2 diabetes mellitus in Trivandrum district, Kerala"** is a record of the research work undertaken by Miss. Anna Ninan in partial fulfillment of the requirements for the award of the degree of "Master of Public Health" under my guidance and supervision.

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Glossary

DM	Diabetes mellitus
T2DM	Type 2 diabetes mellitus
DES	Diabetes Empowerment Scale
NCD	Non Communicable Diseases
PHC	Primary Health Centre
OHPs	Oral Hypoglycemic Drugs
SD	Standard Deviation
CVI	Content Validity Index

ABSTRACT

Background

The prevalence of diabetes mellitus in the state of Kerala is relatively high when compared to the rest of the country. This state also has high levels of literacy and better access to health care facilities. In such a state, the literacy could be used to better manage chronic conditions like diabetes mellitus. Therefore an empowerment approach in treating chronic diseases is essential.

Objectives

The study aims at assessing the level of empowerment among patients with diabetes; the factors associated with it and if educating patients about mechanisms of self management would make a difference.

Methods

The study was a cross sectional survey using a Diabetes Empowerment Scale (DES) validated for use in India with three subscales in it: (i)Managing psychosocial aspects of diabetes[9 items] (ii)assessing dissatisfaction and readiness to change[9 items](iii) Setting and achieving diabetes goals [10 items]; among 300 persons who reported themselves as diabetic; in Trivandrum district, Kerala. The data collected were analyzed using SPSS 21 version.

Results

The study included 300 persons, of which 45.7 percent were males and 54.3 percent females. The mean duration of disease was found to be 6.68± 5.7years. The means score of the scales – managing psychosocial aspects of diabetes, assessing dissatisfaction and readiness to change and setting up and achieving goals were (32.99±6.91), (33.19±6.38) and (36.05±7.82) respectively; which showed high empowerment when compared to another study conducted in Iran. The scores varied significantly by age, sex, duration of the disease, occupation, current living arrangements of the patient, and other health care provider related factors. For men with <10 years of experience with diabetes, empowerment was related to current living arrangements and willingness to change was related to attending educational programmes. For women, none of the documented factors were found to be related to empowerment.

Conclusions

The people with diabetes in Kerala show higher levels of diabetes empowerment when compared to a country like Iran. For men in the early years of adapting to diabetes, education will facilitate self management. However, for women, it is not so. There is a need to identify alternative avenues to empower women to self manage diabetes.

CHAPTER 1

INTRODUCTION

1.1 Background

Diabetes is one of the major chronic diseases prevalent in the world. The absolute number of diabetic patients in the world has increased seven times in the last 20 years.[1] Even though it is a self manageable illness to a great extent, health care professionals and clients find it a big challenge to maintain control of such a chronic disease.[2] This shows that there is a need to emphazise on adequate knowledge and motivation to be provided to the clients on how to self manage the disease. Such motivation and knowledge can developed in clients by a gradual process where the patients themselves derive the power of making decisions on various pharmacological and non pharmacological treatment modalities available and decide which is best suited for them with the support from the family and health care professionals.[3] This process can be achieved by an empowerment approach unlike the traditional approach where the full responsibility of treating the patients rested with the physicians. But for an empowerment approach to be achieved it is essential to educate both health care professionals and clients on the role they need to play for better diabetes care management. [4,5]

Empowerment approach is based on the philosophy of patient centred diabetes care and diabetes education. The assumptions contained in empowerment are-[6]

"1.Human beings have emotional, spiritual, physical, social and intellectual components to their lives that interact in a holistic and dynamic fashion.

2. To be healthy, human beings must be able to actualise the physical, intellectual, emotional, social and spiritual components of their lives.

3. Human beings have the inherent right and responsibility to make major decisions regarding the conduct of their own lives."

Empowerment according to Adolfsson is that " The empowerment process involves client-centered collaborative partnership, an active client role, shared decision-making, freedom to make choices, and acceptance of responsibility for one's actions.[5] This shows that managing a chronic condition like diabetes along with routine life is important to successfully self manage the disease. The new medical and curative approaches in dealing with diabetes have proved to be not very effective in diabetes care.[7] While empowerment approach helps improve the patient's ability to cope with the disease it also contributes to improving the overall well being of the patient.[7] In developed countries like Unites States of America there are intervention programs being organised to empower patients with long term conditions where as in countries like India it is still the traditional approach that is being followed.

1.2 Rationale of the study

The traditional model of care has held sway in the provision of diabetic care globally. Among majority of individuals who were aware of their diabetes condition in United States of America and underwent treatment, only a fifth managed to adequately control diabetes.[8] A number of studies have indicated that the compliance rate achieved by following the traditional model has not been very effective.[9,10] It is possible that for chronic conditions which people experience as part of their everyday life, folding in management of the condition into their lifestyle would facilitate better control. However, that calls for better understanding not only of the disease, but also the individual life style. This can be best managed by the individual themselves, provided they are well informed

about the disease and the requirements for its control. That is where an empowerment approach, which enables individuals to self manage may be relevant.

This study would help us to assess the level of empowerment among diabetes patients and help to identify strategies to make the diabetic patients empowered for long term self care and improved self efficacy. It will enable us to explore the dimensions that need to be focused in order to enhance the process of lifestyle modification. Understanding population preference patterns may help physicians and health care organizations develop better educational programs for their specific patient populations.[8] However, to effectively manage diabetes over a lifetime, programs need to support the continued enhancement of self-management skills, behavioural strategies, social support, and metabolic improvements.[7,8,11] Therefore, this study proposes to examine the extent of empowerment among patients with type 2 diabetes and determine the factors associated with empowerment with a view to identifying the social and behavioural characteristics that may serve to enhance empowerment.

1.3 Research question

This study aims to determine which of characteristics of individuals, behavioural and , social,contribute to enhancing empowerment among patients with type 2 diabetes mellitus.

1.4 Objectives of the study

This research question facilitated the identification of the study objectives, which are:

1. to assess level of empowerment among patients with Type 2 Diabetes Mellitus and
2. the factors associated with empowerment and Type 2 Diabetes Mellitus

The minor study objective is

3. to compare the levels of empowerment among patients with Type 2 Diabetes Mellitus who have attended educational programmes and those who have not.

1.5 Chapterization plan for the dissertation

In this dissertation , chapter one includes an introduction with the overview of empowerment and the rationale for undertaking the study. Chapter two provides a summary of the relevant literature identified using the key words ‘diabetes empowerment’, diabetes management’, ‘shared decision making’ and ‘history of diabetes’ in pubmed and google scholar search engines. Chapter three describes the methodology used for the study including a description of the tools used and the variables identified as being relevant and the types of statistical analysis envisaged to achieve the objectives. Chapter four provides findings of the study using simple statistical indicators for the description. Chapter five includes the discussion of the results, the conclusions drawn, and strengths and limitations of the study.

CHAPTER 2
REVIEW OF LITERATURE

This chapter describes the available published literature on the traditional approach in treatment of diabetes mellitus and the need for a newer approach (empowerment approach) in its treatment. It lists the known factors affecting individual empowerment globally; particularly in developing countries like Iran and Iraq. It also examines whether timely interventions have helped patients to be empowered so that diabetes was self managed. The literature includes all the full length articles that were available to the researcher using pubmed and google scholar searches using the key words, 'diabetes management', 'history of diabetes', 'diabetes empowerment' and 'shared decision making'. No restrictions were imposed for the reference period and therefore all studies for which full text downloads were possible have been used. In all 53 journal articles and 1 fact sheet of the World Health Organisation (WHO) have been included in this literature review.

2.1 Diabetic management

In 1922, Dr.Fedrick Banting introduced insulin for the management of diabetes. Since then, there have been many inventions in the diabetes management strategies.[7]Though there has been a wide range of treatment modalities available and widely used among practitioners during different epochs of management, none of them have bee found to be very successful in effectively managing and controlling the disease.[7,8] Diabetes still continues to be a disease that is responsible for morbidity and mortality among the persons affected. Studies show that this situation is a consequence of improper use of guideline based therapy.[7] It can also be due to the time constraints, attitudinal issues, poor referrals to endocrinologists and other specialists, lack of patient counselling and lack of practice of evidence based medicine.[7] All of these factors contribute to deterioration in the efficiency of patient care in countries like India. Management of the psychosocial aspects of diabetes is recommended by The American

Association of Clinical Endocrinologists (AACE) which suggest that the treatment should also include team based care and counselling. Though there are various options being suggested, currently the most practiced mode of treatment is pharmacological treatment. An alternative approach to diabetic management, calls for a change in the approach to treating, where the physical and emotional well being of the client's needs have to be taken in to consideration. Studies show that physicians are apprehensive about encouraging this approach since they feel treating a patient is a physician's own responsibility and monopoly.[12]

2.2 Diabetes mellitus situation in World /India

2.2.1 Global scenario

Diabetes is the fifth leading cause of death in most high-income countries and there are studies that show that it is also an epidemic in many low- and middle-income countries. The highest prevalence in diabetes continues to be in North America and Caribbean, the Middle East and North Africa, and South-East Asia.[13] Approximately 246 million people worldwide have diabetes, this constitutes almost 6 percent of the world's adult population.[5] About 80 percent of these clients live in developing countries and suffer from type 2 diabetes mellitus, of whom 46 percent are in the 40–59 year age group.[13] A meta synthesis shows that Eastern Mediterranean and Middle East have the highest prevalence rates.[5]The highest pre diabetes prevalence is found to be in the European region where around 9 percent of the adult population is at a high risk of developing type 2 diabetes mellitus(T2DM) according to the data from International Diabetes Federation for 2006.[5]

It is expected that the world prevalence of diabetes among adults (20-79 years) will increase from 6.4 percent in 2010 to 7.7 percent by 2030.[13] Given the difference in growth rates for diabetes prevalence across regions, the expected increase in developing countries is 69 percent where as in the developed countries the expected increase in growth is only 20 percent during

the same period (2010-2030).[13] Clearly, the developing world is going to be severely burdened by diabetes in the future.

2.2.2 Indian scenario

It has been estimated that in 2010 the South East Asian countries had 58.7 million people with diabetes, resulting in a prevalence rate of 7.6 percent among the adult population aged 20-79years).[13] The 2013 report from the Diabetes Atlas mentions that the absolute number of diabetic patients in India is about 65.1 million.[13] Life style changes in the people of Indian ethnic background have been attributed to this increase in the prevalence in this population. The national prevalence of Diabetes among adults was 8.3 percent in 2011.[14]The proportion of the population over 50 years is expected to increase from 16 percent to 23 percent between 2010 and 2030 in India. So the diabetic population is also likely to increase proportionately.[15]

2.2.3 Kerala scenario

Kerala is known to be a state with a high prevalence of diabetes. The prevalence rate by gender and area was 12.3 percent among urban adult men to 22.2 percent in rural women in Kerala, in 2010 where, the average rate for men was 14.3 percent and for women it is 17.8 percent. overall[14] These high prevalence rates can be due to the increased urbanisation and higher life expectancy in Kerala.[15] Early onset of disease and late diagnosis make diabetes treatment in Kerala complex. Higher prevalence of diabetes could be expected in Kerala since it has the highest proportion of elderly- about 13 percent among the Indian states and also due to the drastic change in the living standards and life style in the age group of 20-25 years.[15]Therefore, there is an urgent need to help patients already diagnosed with T2DM to cope with the disease and deal with it in a positive manner. To do so, the extent of empowerment existing among the patients and the factors that facilitate empowering them need to be identified.

2.3 Need for an empowerment approach in treating diabetes mellitus

Diabetes is a major threat to global public health and it is one that is getting rapidly worse, and the biggest impact expected is on adults of working age in developing countries.[13] The relatively higher prevalence rates as mentioned above among the adult population call for changes in the existing treatment modalities. When such high proportions are affected and when the everyday engagement of a provider is unnecessary but every day treatment is necessary, empowered patients can learn to manage their own treatment. This calls for a change in the treatment modalities based on a paradigm shift in perceptions of treatment among providers and patients. The change from a traditional approach to an empowerment approach will help the patients have an active role in understanding and managing his/her difficulties due to the disease (a self-directed behaviour change which can become a key to better health outcomes).[12,16] The complications and mortality due to these complications are signs that alternative approaches are needed to not only prevent the disease but also control it.

2.4 Existing interventions for diabetes mellitus management

The Diabetes Control and Complications Trial(DCCT has indicated that there should be an intensive review approach to Diabetes Care.[16] It showed that in order to achieve better health outcomes it is not just compliance to health care regimen that is needed but a person's ability to understand ,manage his/her disease condition, have a power in decision making as well as in enabling others of the same condition to cope with the difficulties.[16-18] This approach is different from the traditional approach where the patients play a passive role while the physicians are entrusted with full responsibility of the patient.[17-19] An example of an initiative " Expert Patient programme" among South East Asian patients also indicates that for self management of chronic diseases; patients should be encouraged to be partners in treatment and care of the diseases.[17,19] There have been several intervention studies that had been

undertaken in developed countries as part of drug efficacy tests and as part of NCD programs for chronic disease.[19] These interventions have been effective with respect to drug efficacy.[19]What is not known is whether or not these interventions have been successful as the participants have not been followed up long term to determine the nature and quality of diabetic care and management.[19] There have been instances where patients had to opt out of intensive therapies which may have prevented complications because they were not supported in their efforts.[20] This is where there is a need for the patients to be active participants in decision making and take responsibility for the management of the disease. In India as part of preventing chronic conditions like diabetes a number of Intervention Studies had been attempted. They include:

1. Indian Diabetes Prevention Programme(IDPP)[21]
2. Diabetes Prevention and Management Program(DPM)[22]
3. Chennai Urban Study[23]
4. Community based Intervention program Ballabgarh[24]

Most of these studies intended changing dietary habits and/or physical activity. Though the interventions were found to be successful; the follow-up was for a limited period of time. Therefore the real effectiveness of these studies in terms of how effective it was for the target population and whether diabetes care had improved for them is not known. [14] Though Kerala is the state with highest literacy rate, studies show that the knowledge regarding diabetes and its risk factors is very low. Those who are aware of the required health behaviour and the medications, find it difficult integrate the medical regimen with the behavioural changes. The key to diabetes management is knowledge of self.[25] The corner stone of diabetes care should be empowering people with diabetes to actively participate in the management of diabetes.[26]

2.5 Exisitng approaches to management of diabetes mellitus

2.5.1 The historical approach to diabetes care

The historical approach to diabetes care has always been medication driven.[28] Around 3500 years ago the disease was identified by Egyptians. Different notions about it prevailed among Greek and Indian physicians.[29]Avicenna; an Arabic physician of the 9th century recommended treatment of a mixture of lupin, fenugreek and zedoary seeds that possess mild hypoglycemic activity. In 1809 John polls treated his patients with meat rich carbohydrate restricted diet, and sometimes supplemented this with an anorectile compound including antimony, opium and digitalis like the starvation diet.[29]When the link between insulin and pancreas was discovered, pharmaceuticals tried developing the drug for diabetes.[29] While some physicians believed that advent of Insulin alone would solve the problem of diabetes, some thought diet control is also essential to control the disease. Spices, herbs and indigenous plants like onion, garlic, java plum (*jamun*), bitter gourd (*karela*),fennel flower (*kalongi*) all these had hypoglycaemic effect. Clinically an oral hypoglycaemic drug was developed accidentally in 1942.[29]Life expectancy increased after these treatment modalities were started.[30] Physical activity was a newer treatment modification introduced in the 21st century. But the trial DCCT mentioned earlier showed that these treatment modalities needed to be reviewed since patients were unaware of how to cope with the disease in a positive manner and took the disease as a burden.

2.5.2 Empowerment approach

'The process of empowerment is the discovery and development of one's inborn capacity to be responsible for one's own life. People are empowered when they have enough knowledge to make rational decisions, control, resources to implement their decisions and experience to evaluate the effectiveness of their actions'.[27]

This empowerment approach helps to provide patients with a self-directed behaviour change which can become a key to better health outcome. This is a way of giving patients information regarding the disease from experts and support to achieve the best possible diabetes outcome. Empowerment is defined as 'An enabling process or outcome arising from communication with the health care professional and a mutual sharing of resources over information relating to illness, which enhances the patient's feelings of control, self-efficacy, coping abilities and ability to achieve change over their condition'.[17] The WHO defines it as a practice which people achieve greater control over their own decisions and practices affecting their health.[28]

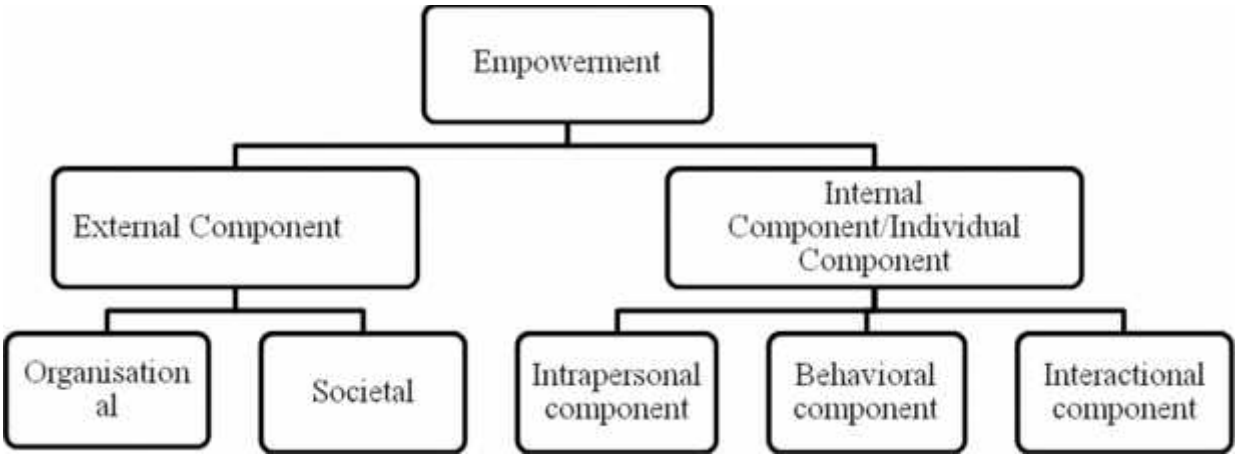

*Fig:1 shows the components of empowerment described as per Bakker et al.[20]

Empowerment model has an external and an internal component. The external component includes responsibility of organisations and social institutions to help individuals control themselves. The internal component considers individuals' responsibility to control one self. Thus, empowerment can be assessed at these different levels. The individual component can again be sub divided in to interpersonal component, intra personal component and interactional component, the intrapersonal component refers to how

people think about their capacity to influence social and political systems important to them such as perceived control, self-efficacy, sense of community and perceived competence. Second, the behavioural component refers to specific actions to exercise influence through participation in organisations and activities. The third, that is, the interactional component includes knowledge about needed resources and problem-solving skills.[17,19,20]

2.6 Assessment of Diabetes empowerment

A number of scales are available to assess empowerment among patients in general and diabetics in particular. These are listed and described to identify their relative strengths and weaknesses.

Rogers Empowerment Scale(ES) has been developed in the context of disability[20,31]: This scale is widely used due to the highest number of positive ratings for its psychometric properties, but it has not been validated in a developing country setting. An unpublished thesis of Evelien Rosens et al. indicated that the ES in its current form is cannot be recommended to assess empowerment in people with a range of disabilities in Tamil Nadu, South India.[20]

Empowerment Questionnaire for Inpatients(EQuIP) &Vrijbaan,Youth Empowerment Scale Health (YES-MH): This is a scale that has been developed to measure empowerment in general.[20] This scale has had criterion validation done in the United States for measuring empowerment in general. It has been used to determine empowerment among people with mental disabilities like mental health disorders, again in the United States.

Patient empowerment scale for patients living with long term conditions (Diabetes, CHD, Rheumatoid Arthritis, Hypertension)[17]: This scale considers 5 dimensions which bring in both internal and external components of empowerment such as identity, knowledge and understanding, personal control, decision making and enabling others. But the scale has its limitations as reliability has not been examined using the test-retest approach. Moreover, the response rate was very low for the validation study. The scale has not been validated in India. The methodology employed to determine the cut-offs for the scale have not beeb reported.I It would be tedious for patients to answer as the scale is very extensive.

The Diabetes Empowerment Scale(DES)[16]: The Diabetic Empowerment Scale has been developed to measure the psychosocial self efficacy among people with diabetes by the Michigan Diabetes Research and Training Centre, University of Michigan. It has three sub-scales and has been validated in Hindi for India. It is the only scale that is focused on people with diabetes and has found applicability in developing countries.

The scale selected for measuring Empowerment in this study is Diabetes Empowerment Scale developed by University of Michigan Diabetes Research and Training Centre. The website for this university has an option to download the tools and instruments that they have developed. The scale is meant to measure the self care efficacy of patients with Diabetes. The scale has been validated in India while others have not been validated and that can be applied only to Western context and not an Indian context.

2.7 Correlates of diabetes empowerment

In developed countries and developing countries like Iran a number of studies assessed the level of empowerment among both type1 and type 2 diabetes mellitus. [32-34] Many

factors that actually hinder the effective self management of the disease have been identified. A study conducted in Iran which looked in to the aspect of empowerment showed that factors like age was inversely associated with empowerment and men had higher levels of empowerment when compared to women.[32,33] The Diabetes Atlas also mentions the need to assess the role of gender, medical accessibility and place of residence(urban/rural) as factors that affect the self management of diabetes.[35] Another study in south Carolina looked in to the age, gender, education, employment, marital status, income and health insurance as independent variables and their effect on medication adherence and diabetes self care behaviours.[36] In India a study was conducted to assess the quality of life of people with diabetes and it was found that duration and complications were two factors which had an association with empowerment.[33,37] The more patients know about diabetes and ways to self-manage or control their disease, the better their chances are of minimizing and preventing complications associated.[38-40] The few studies that measured empowerment indicate that higher levels of empowerment are linked to better health outcomes in terms of drug adherence and glycemic control.[33,37] The evidence indicates that a new approach is needed that recognizes that patients are in control of and responsible for the daily self-management of diabetes and that, to succeed, a self-management plan had to fit patients' goals, priorities, and lifestyle.[39]

A study conducted in southern India on self care behaviors of patients with diabetes show that people with higher economic status and family support had better adherence to drugs and to blood glucose monitoring.[40] These are two factors that can result in higher levels of empowerment. A study in the Unites States of America among hospital based diabetic patients indicated that low glucose levels were seen in people who could take care of themselves and those who managed self care, did have a positive attitude towards their disease experience.[43]Another study in the United Kingdom among individuals who had

good control of their diabetic condition also indicated that self care efficacy includes validating the blood glucose levels and that people who could take care of themselves had better glycemic control.[41.] Although a number of internal and external factors contribute to the level of blood glucose it is widely accepted that good self-care protects against complications in both type 1 and type 2 diabetes and that the patient must actively manage the disease's requirements in order to achieve optimal blood glucose outcomes.[46,47] Studies conducted in Iran and Bangladesh proved that religion is yet another factor that had a role in taking care of chronic diseases. Some believed that it was God's doing and that God would take care of the disease while some believed that the disease need to be taken care of as it is God given.[48,49]

Furthermore, active participation in decision making is essential since the priorities of each individual with regards to the treatment and health outcomes is highly individualised. Enhanced participation has shown improved levels of blood glucose control.[50-52]Therefore there is reason to believe that diabetic empowerment may be a way to manage diabetic care in a population that has good access to health care and therefore informed about diabetic management and is literate.

CHAPTER 3
METHODOLOGY

3.1 Study design

The study was an exploration into the levels of empowerment among type 2 diabetes mellitus patients. Therefore a cross sectional study design was sufficient.

3.2 Study setting

The study was undertaken in one district of Kerala, viz. Thiruvananthapuram. According to the Human Development Report of 2005 the Human Development Index score for Trivandrum district was 0.773 which was the same as the state average; the life expectancy of the district was 75.2 years state average was 74.6 years.[54] The literacy rate of Thiruvananthapuram was 89.4 percent against a state average of 90.9 percent.[14] Therefore Thiruvananthapuram represented a typical district of Kerala. The study was located in the rural parts of this district.

3.3 Study population

The study population consisted of persons who self reported themselves as having type 2 diabetes mellitus in rural Thiruvananthapuram district, Kerala.

3.4 Inclusion criteria

a. cases of self reported type 2 diabetes mellitus who were willing to provide written informed consent and confirmed having a prescription form/medication strip;
b. Only persons aged 30 years and above were included. This age group was selected because there are screening programs being conducted for

detecting cases with type 2 diabetes mellitus from age of 30 and above. Anticipating adequacy of subjects for the study this age group of those aged 30 and above were selected.

c. Only persons who had a minimum duration of one year after having diagnosed as Diabetic were included. Since Diabetes Mellitus is a chronic disease, a minimum period of one year was considered sufficient to get accustomed to the disease and establish routine activities of life surrounding it.

3.5 Exclusion criteria

Those cases who were bed ridden, who were not able to conduct their routine self care practices, and/or those with terminal illness were excluded from the study. These cases were excluded because such situations would affect the normal daily activities of an individual. Further such an individual would require assistance in the performance of their everyday activities. Therefore empowerment which is purely individualized that needs to be assessed cannot be measured.

3.6 Sampling strategy

While simple random sampling would reduce the sample size and provide unbiased estimates, it was operationally inconvenient. For this reason, we resorted to using multistage cluster sampling.

The main reason for cluster sampling was constraints due to time. Cluster sampling also gave diabetic cases from 30 clusters in rural Trivandrum which is a representative of the diabetic cases in the whole rural Trivandrum.

3.7 Sample size

Sample size was calculated using Open Epi Version 2.3.1. A study conducted in Iran on empowerment measured it using DES scale which had three domains. The sample size was computed to be 260 using the mean score of one of the domains (setting and achieving goals- 10 items) in the study which was 27.63±7.90.[32] This mean score was selected since it had the highest standard deviation among the three domains and therefore would be adequate to cover the other three domains too. This standard error was rounded-off to 8.0. Assuming a power of 80 percent, precision of 5% and a design effect of two (since a cluster random sampling strategy was envisaged), and a non-response rate of 10%; the sample size was estimated to be 260, For operational convenience, it was rounded-off to 300.

3.8 Sample selection procedure

The first stage of sampling was to select three block panchayats from the 11 block panchayats, in rural Thiruvananthapuram district. This was be done by lottery method. The second stage of sampling was the selection of two grama panchayats from each of the three blocks, which resulted in a total of six grama panchayats. From each of these grama panchayats, five wards were randomly selected; yielding a total of 30 wards. In the next step from each of these 30 wards which formed the clusters; 10 self reported diabetic patients were identified. Using pen rotating method the first house was identified; the pen was rotated and the direction of the tip of the pen if pointed towards a house that house was selected as the first one to be interviewed. Starting from the first house all houses were visited till 10 self reported diabetic patients, who provided informed consent were included in the study.

Table 3.1 Sample selection procedure

BLOCK PANCHAYATS					
Nedumangadu		**Vamanapuram**		**Vellanadu**	
GRAMA PANCHAYATS					
Karakulam	**Aruvikkara**	**Manickal**	**Nellanadu**	**Vellanadu**	**Uzhamalakkal**
WARDS					
Eenikkara	Azhicode	Koliyakodu	Venjaramoodu	Kanyapara	Manikapuram
Kachani	Kolathukal	Koppam	Manickamangalam	Konganam	Chakrapanipuram
Puravurkonam	Mailam	Vembayam	Nellanadu	Koottavila	Paruthikuzhi
Mythri nagar	Kadambanadu	Annal	Kottukunnam	Veliyanoor	Puthukulangara
Chittazha	Karumarakkode	Pirappancode	Keezhayikonam	Chaanga	Aiyappankuzhi

3.9 Data collection procedure

Data collection was done using a structured interview schedule, including the Diabetes Empowerment Scale. The interview schedule consisted of two parts. The first collected socio-demographic information about the participant to identify the correlates of empowerment and the second part consisted of a 28-item Diabetes Empowerment Scale(DES-5) developed by the University of Michigan Diabetes Research and Training Centre.[16] This scale has been widely used in assessing empowerment among diabetes patients. It has been validated in English, and its reliability checked.[20,33] In a systematic review of instruments developed for assessing various aspects of diabetes mellitus, DES was found to have good content validity , reproducibility and theoretical grounding.[20] It has been translated in to Swedish, Chinese, Iranian, Persian and even to Hindi.[20] Therefore, this scale can be used in developing country situations. Moreover, other scales on empowerment were not validated in the Indian context. This scale is available online in the official website of University of Michigan Diabetes Research and Training Centre

as Diabetes Attitude Questionnaire. The scale is named so to avoid confusion or bias that the word empowerment can create while filling up the questionnaire. The Scale has only 28 items under three categories which is easy for the patients to fill up and is not time consuming or complicated like the Patient Empowerment Scale.[17]

3.10 Data collection process

Table 3.2 Summary of sample selection in rural Thiruvananthapuram, Kerala; 2014

Number of Panchayats	6
Number of Wards/Clusters	30
Number of houses visited	907
Number of Diabetic cases identified	312
Participants eligible and consented for the study	300

From the 11 block panchayats in Rural Trivandrum, three were randomly selected and from each of these block panchayats two grama panchayats were randomly selected. From each grama panchayats, five wards were randomly selected. From each randomly selected ward, 10 subjects who were willing to participate and gave written informed consent were recruited for the study. In all, thus, 300 persons were recruited for this study. On reaching the house, the nature and purpose of the study were explained to the participant identified as a diabetic case.

3.11 Variables in the study

3.11.1 Definition of variables

Diabetes mellitus : A person with diabetes mellitus was selected as one who self reported himself/herself as having diabetes, and having a prescription for diabetes treatment either on oral hypoglycaemic drugs or insulin from a modern medical practitioner. Cases of diabetes based on self reports were included as there was no list of persons medically diagnosed with diabetes available in the community. Though there are

NCD registers at PHC and sub centre levels which would list subjects with diabetes, the completeness of these registers since they only screen patients who come to the clinics was in question. For this reason, a listing of individuals from the community, even though their diabetic status was based on self reports, was preferred.

3.11.2 Operational definitions for independent variables

1. Age : A study in Iran reported that age had a negative effect on one dimension of empowerment: the dissatisfaction and readiness to change.[32,33] So it was essential to include this as a factor affecting empowerment.
2. Sex : Studies show that men are more empowered than women.[35] This variable was included in order to examine sex differences in empowerment, if any, among diabetic persons in Kerala. Both, age and sex were known biological determinants, which needed to be controlled in the analysis.

3. Religion : It was found that religion had strong effect on diabetes empowerment ; it was believed that it was a disease God has given so it is life long and it is important to care for it. For this reason the power of faith was a facilitator of empowerment.[48,49]
4. Educational Status : As educational levels rose, so did the level of empowerment, particularly in Iran.[32] In an Indian study, the association was found to be reverse[33]. Educational status was included to determine the nature of the association with diabetes empowerment in the context of Kerala
5. Working conditions/occupation : A study showed that current work was unrelated to diabetic empowerment.[36] However, occupation is also a marker of social and economic status. It was included in the analysis as a marker of whether or not the subjects had an independent income or would have the time away from work to seek health care/test for diabetes and manage care.

6. Current living arrangements : This variable was included to determine if family support would help the patients self manage the disease.[36]
7. Blood sugar level : Studies indicated that people who had less control of their blood sugar levels had low scores of empowerment.[46,47] Patients who were able to fit diabetes in their life in a positive manner perceived less distress and had lower levels of HbA1c. One the other hand, a study among south Asians found that monitoring of blood glucose levels was not associated with empowerment.[41]
8. Marital status : Marital status is both a marker of social status and potential for managing the non-medical aspects of diabetes. The potential for non-medical management is captured using family support .[36] This aspect is also captured through current living arrangements which was measured using the presence of a spouse.
9. Access to health care facility : A study found that access to medical care was an important factor to be assessed as it will help to know if patients have knowledge about the disease and if they have active participation in management of the disease.[35]
10. Duration of illness (>= 1 year) : Studies show that duration of illness did have an effect on the levels of empowerment.[33,37] However, the direction of relationship was not consistent. Some studies indicated that longer duration of experience with diabetes associated with higher empowerment, while others indicated a reversal in the relationship. One study showed lower empowerment with duration of illness [3,4]while another one showed higher levels of empowerment when the variable was analysed.[7]
11. Other illness if any : There is evidence indicating that presence of complications /illnesses lower the individual's ability to psychologically manage Diabetes.[14]
12. Current illness : The experience with current illnesses has been treated as a marker of severity of diabetes in other studies, and therefore of relevance. [14,35]

13. Stress : Stress has been identified as an important factor associated with diabetes empowerment[43]. Measuring stress would also help to examine if family support is a factor. However, measuring the levels of stress would have required the use of additional scales. Therefore it was not considered.
14. Attended any Diabetes Educational classes/program : There is evidence to indicate that educational programs regarding diabetes and its management help persons to manage their condition.[33,37] For this reason, this variable was considered for inclusion in the analysis. It was measured as whether or not a particular individual had been exposed to educational programs on diabetes.

3.11.3 Outcome variable definition

Empowerment : It is a practice which people achieve greater control over their own decisions and practices affecting their health.[17] There is evidence to indicate that educational programs regarding diabetes and its management help persons to manage their condition.[33,]

It has been defined as an enabling process or outcome arising from communication with the health care professional and a mutual sharing of resources over information relating to illness, which enhances the patient's feelings of control, self-efficacy, coping abilities and ability to achieve change over their condition.[17] One can think of a participant as having a high empowerment score if they score more than the mean score for that population. It can also be seen as a relative score in comparison with mean levels of empowerment across populations.

There are a number of scales available for assessing empowerment among the diabetes patients. One of these has been used in the context of disability, called the Rogers' Empowerment Scale(ES) .[31] Other scales such as the Empowerment Questionnaire for Inpatients(EQuIP) and the Vrijbaan Youth Empowerment Scale –Mental health (YES-

MH) had been used to measure empowerment in general rather than in the context of the experience of diabetes.[20] There are other scales that measure patient empowerment such as the Patient empowerment Scale(PES) for patients living with long term conditions(Diabetes, CHD, Rheumatoid Arthritis, Hypertension). [17] A Diabetes Empowerment Scale (DES) developed by the University of Michigan measured the psychosocial self-efficacy of people with diabetes.[16] A systematic review on various empowerment scales indicated that the DES has been validated for use in a developing country, and was designed specifically to measure self efficacy among people with diabetes.[17] It is available for use by researchers through the website of The University of Michigan Diabetes Research and Training Centre. DES is validated in India in the language Hindi. Since this study was to be done in Kerala where Malayalam is the regional language; the translational validity of the scale needed to be done. Translational validity included content validity and face validity. Face validity was done by giving it to the experts to assess if the questionnaire had clarity and was appropriate.

Content validity was done to determine if the contents of the questions in the scale were relevant.

The steps involved in translational validation are listed below:

Step 1

The English Questionnaire was given to three translators who had a good command over the English language as well as Malayalam for translation into Malayalam.

Step 2

Back translations of the Malayalam translation of the DES scale was done.

Step 3

Three translations were compared with the English Questionnaire and each other. Content validity was rated according to the necessity and relevance of each item and then the content validity index (CVI) was obtained to estimate the validity of the items according to Lynn Method of content validity estimation.[53] CVI for the entire scale was calculated to be 0.83 which was required to establish content validity by a panel of six experts.

Step 4

Pilot testing of the translated questionnaire was done for 5 respondents who were diabetic. They were asked to describe the difficulties in filling the questionnaire; in understanding the meaning of each question and if there was any confusion while filling the questionnaire.

The scale had 28 questions with three subscales in it. The total scores ranged from 28-140 for the overall scale and for each subscale with nine items the scores ranged from 9-45 and for the subscale with 10 items, the score ranged from 10-50.

3.14 Data storage and cleaning

The data collected using this structured schedule was computerised using Epidata version 3.1 and then imported to SPSS Windows version 21.0 for analysis. The hard copies of interview schedules were stored by the researcher. The confidentiality of the information provided by the respondents will be maintained. All the data sheets were checked manually before data entry. Computerized data cleaning was again done after data entry before proceeding to data analysis.

3.15 Statistical data analysis

The data analysis for the study included uni-variate, bi-variate and multi-variate analysis. Means and standard deviations were computed for the continuous variables and frequencies (with percentages) for categorical variables. To examine the association between the outcome measured as a score and the independent variables t-tests were used. For examining the association between empowerment and its subscales and psychosocial correlates, analysis of variance (ANOVA) was used. For building the multivariate ANOVA model, those variables which had strong associations conceptually and statistically were retained. Further, the associations between the independent variables were examined using chi-square test of association. The model was carefully built to retain conceptual as well as statistical validity, by eliminating those independent variables from the ANOVA that were strongly associated.

3.16 Expected outcome

The level of empowerment among the self reported diabetic patients and factors associated with this empowerment were to be identified.

3.17 Ethical considerations

Ethical clearance was obtained from the Institutional Ethics committee (IEC) of Sree Chitra Tirunal Institute for Medical Sciences and Technology(SCT/IEC/614/JUNE-2014) Written informed consent was obtained from all the participants in the study. The information about the patient's identity was not included with the main data and only coded records were used. All materials, which identify the respondent, were kept strictly confidential and not included in any of the reports published in the public domain.

CHAPTER 4
RESULTS

The survey included 300 self reported diabetes mellitus patients out of 312 identified in the community, resulting in a response rate of 96.15 percent.

The mean age of the sample population was 56.69±11.093 years (range 30- 90 years). There were 45.7 percent males and 54.3 percent females in the study. This chapter describes the data analysis including the sample characteristics, bi-variate and multi - ariate analysis. Mean was calculated for the continuous data and frequencies used to depict categorical and binary variables by sex.

4.1 Socio-demographic characteristics of the participants

The age of the study participants ranged between 30 -90 years. Age was grouped in to six categories. When classified by age group, 25.7 percent of the participants were older adults in the age group 65 and above. There was a higher proportion of women in this age group when compared to men, 31.3 percent females vs 19 percent males. The proportion of males under the age group of < 45 years were more than women in the same group.

Hindus formed the majority of the subjects included in the sample. The scheduled tribe category among the caste groups constituted the smallest, with only 1.3 percent of the population belonging to this group. The variable education was grouped into two categories, the first being up to high school-including no formal education, completed primary, upper primary and high school and the second category - above high school-including those who completed higher secondary, degree and above. The study

population had 100 percent literacy with 84.7 percent of the females having undergone up to high school education and 37.2 percent of the males with above high school education.

Employment was categorised into two groups to capture those who were employed and those who were not. Clerical, manual labourers/unskilled labourers, professionals were grouped in to the employed group while homemaker, unemployed and retired persons were grouped in to unemployed group. Out of the 300 subjects in the study, 45.3 percent were employed and among females it was very low, just about 20.2 percent were employed. On the whole, the proportion of those unemployed was 79.8 percent though most of them had completed at least primary education.

Current living arrangements showed that around 86.6 percent of the participants lived with their family while 19 percent had no family support 28.8 percent of the females lived without their spouse. There were 52 percent of the study participants who did not have health insurance. It was to be noted that female participants were high in proportion when looked for who had and who did not have health insurance. Personal income was classified into seven groups. Around 40.4 percent of the males had an income <10,000, will 58.8 percent of the females had no income.

Table 4.1 : Distribution of participants by socio-demographic characteristics and sex; Thiruvananthapuram district, 2014

Variable Name	Categories	Male (n=137)	Female (n=163)	Total (n=300)
Age group	<45	21.2	12.3	16.3
	45-49	12.4	12.9	12.7
	50-54	17.5	14.7	16.0
	55-59	13.9	8.6	11.0
	60-64	16.1	20.2	18.3
	65 and above	19.0	31.3	25.7
	Total	100.0	100.0	100.0

Religion	Hindus	76.6	74.2	75.3
	Christians	13.9	9.8	11.7
	Muslims	9.5	16.0	13.0
	Total	100.0	100.0	100.0
Caste	General	52.2	58.9	59.3
	SC	16.8	17.8	17.3
	ST	2.2	0.6	1.3
	OBC	21.2	22.7	22
	Total	100.0	100.0	100.0
Education	Up to high school	62.8	84.7	74.7
	Above high school	37.2	15.3	25.3
	Total	100.0	100.0	100.0
Employment status	Employed	75.2	20.2	45.3
	Unemployed	24.8	79.8	54.7
	Total	100.0	100.0	100.0
Current Living arrangement	With spouse	92.7	70.6)	80.7
	Without spouse	7.3	29.4)	19.0
	Total	100.0	100.0	100.0
HealthInsurance	Yes	46.7	49.1	48.0
	No	53.3	50.9	52
	Total	100.0	100.0	100.0
Income				
	<1000	14.6	16	15.3
	1000-10,000	40.1	19	28.7
	10,001-20,000	13.9	6.7	10
	20,001-30000	10.2	0.6	5
	>30,000	4.4	1.2	2.7
	Not willing	8	0.6	4
	No income	8.8	55.8	34.3
	Total	100.0	100.0	100.0

4.2 Diabetes status of the study participants

The study participants were categorised by their duration of diabetes mellitus experience. The duration was grouped into five categories each representing five year age groups,. Only one participant could not recollect the year in which DM was diagnosed, while 43.3

percent of the participants were recently diagnosed with the disease (within 1- 4 years). A majority of the participants, both male and female had been diagnosed recently, with 45.3 percent of the men being diagnosed within the last 1-4 years and 41.7percent of the women being diagnosed in the last 1-4 years. The treatment modalities followed among the participants were examined in detail.

While equal proportions of males and females (about 6 percent) were on exclusive insulin treatment, a slightly higher proportion of females were on oral hypoglycaemic agents (75.2 percent) when compared to males (72.2 percent). Close to half the study participants had their blood sugar (BS)levels checked once a month and a quarter checked it once in 2 months. The blood sugar levels were verified by checking as to what it was during the last time it was checked, and those who reported specific levels were asked to show the test results. Slightly more than a fifth of the participants (21.0 percent), either did not remember or did not know their sugar levels. Others could produce their most recent test results. According to the American Diabetes Association fasting blood sugar level above 126 mg/dl and random blood sugar >=200 mg/dl is diagnosed as diabetic. With this reference the blood sugar levels were classified in to controlled and uncontrolled. It was found that 51.3 percent of the population had uncontrolled diabetes and a slightly higher proportion of male participants reported sugar levels which were beyond permissible levels (53.3 percent) when compared to the females (49.7 percent). Slightly more than 6 percent of the study participants used a combination of exercise and diet as part of the treatment of diabetes mellitus.

Table 4.2 : Distribution of participants by diabetic status and sex; Thiruvananthapuram district, 2014

Variable Name	Categories	Male (n=137)	Female (n=163)	Total (n=300)
Duration of Diabetes	Do not Know	0	0.6	0.3
	1-4 years	45.3	41.7	43.3
	5-9 years	32.1	35.6	34
	10-14years	13.9	12.3	13
	>=15years	8.8	9.8	9.3
	Total	100.0	100.0	100.0
Type of Current treatment	Insulin Only	6.6	6.1	6.3
	OHPs[a]	40.1	58.9	50.3
	Exercise only	1.5	0.6	1.0
	Diet Control only	2.9	4.3	3.7
	Insulin and other treatment	12.4	9.2	10.7
	OHPsand other treatment	32.1	17.2	24.0
	Exercise and Diet control alone	2.9	1.2	2.0
	Others[b]	1.5	2.5	2.0
	Total	100.0	100.0	100.0
Blood sugar check frequency	Daily	0.7	0.6	0.7
	Weekly	5.8	5.5	5.7
	Once in a month	49.6	49.7	49.7
	Once in 2 months	25.5	29.4	27.7
	3-6months	12.4	8.6	10.3
	>6 months	5.8	6.1	6.0
	Total	100.0	100	100.0
Blood Sugar Level	Controlled	30.7	25.2	27.7
	Uncontrolled	53.3	49.7	51.3
	Do not remember	14.6	15.6	15.7
	Do not know	1.5	8.6	5.3
	Total	100.0	100.0	100.0

[a]Oral Hypoglycemic Drugs ; [b]Ayurvedic and Homeopathic Treatment

4.3 Characteristics of the health care facility

The description of the health care facility helped capture the type of health facility used, doctor preferred and nature of decision making regarding the treatment modalities. Around 40.3 percent of the participants depend on government hospitals and 25 percent prefer Primary Health Centres (PHCs). Thus, a majority of the study participants used public facilities.

The reported rationale for using the specific health care facility indicated that almost 45.3 percent of the population preferred a healthcare facility which was nearby and accessible. Around 37 percent preferred a specialist doctor; while only 1 percent said a health care facility they preferred because it was trustworthy. Among the female participants, 55.8 percent had someone accompanying them to the health care facility, while 62 percent of the males had no one accompanying them. Half of the men were treated by their preferred doctor, but just about a third of the women were (33.7 percent).

Table 4.3: Distribution of participants by the characteristics of the health care facility and sex; Thiruvananthapuram district, 2014

Variable Name	Categories	Male (n=137)	Female (n=163)	Total (n=300)
Health care facility preferred	PHC nearby	21.9	27.6	25.0
	Other Govt hospital	37.2	42.9	40.3
	Private Clinic	21.9	16.6	19.0
	Private Hospital	19	12.9	15.7
	Total	100.0	100.0	100.0
Preference to the facility	Nearby and accessible	43.1	47.2	45.3
	Good and specialist Dr	18.2	14.7	16.3
	Good Treatment	37.2	36.8	37
	Trustworthy	1.5	0.6	0.3
	Children take there	0.0	0.6	0.3
	Total	100.0	100.0	100.0

Accompaniment	Yes	38.0	55.8	47.7
	No	62.0	44.2	52.3
	Total	100.0	100.0	100.0
Doctor Preferred	Yes	50.4	33.7	41.3
	No	49.6	66.3	58.7
	Total	100.0	100.0	100.0

4.4 Sources of knowledge regarding the disease and prevalence of other chronic conditions

The sources of knowledge about the disease provided an overall idea about the credibility of the knowledge source regarding the disease. Around 62.8 percent of the males and 54.6 percent of the females discussed their disease condition with their doctors. About 54.7 percent of the males had attended some kind of educational program for diabetes mellitus, 53.4 percent of the females had not attended any such programs. Around 46 percent of the population had another chronic illness other than diabetes mellitus. A higher proportion of females had an additional chronic condition, when compared to males (43.1 percent males vs 48.5 percent females). About 38 percent of those who had another condition, had hypertension as a co-morbidity(52 out of 138 persons). The proportion of females who had both hypertension and high cholesterol was around 15.3 percent when compared to 10.9 percent of the males.

Table 4.4 Distribution of participants by sources of knowledge regarding diabetes mellitus and other morbidities and sex; Thiruvananthapuram district, 2014

Variable Name	Categories	Male (n=137)	Female (n=163)	Total (n=300)
Discussion with Doctor	Yes	862.8	54.6	58.3
	No	37.2	45.4	41.7
	Total	100.0	100.0	100.0
DM program attended	Yes	54.7	46.6	50.3
	No	45.3	53.4	49.7
	Total	100.0	100.0	100.0
Presence of other Chronic illness	Yes	43.1	48.5	46.0
	No	56.9	51.5	54.0
	Total	100.0	100.0	100.0

Chronic Illness	Heart Disease	2.9	1.2	2.0
	Hypertension	16.1	18.4	17.3
	High Cholestrol	4.4	6.1	5.3
	All three	4.4	1.8	3.0
	Hypertension and cholesterol	10.9	15.3	13.3
	Others	4.4	5.5	5.0
	Not applicable	56.9	51.5	54.0
	Total	100.0	100.0	100.0

4.5. Assessment of diabetic empowerment

The level of diabetes empowerment among selected diabetes patients in Thiruvananthapuram district was assessed using the 28 item 5 point Likert type diabetes empowerment scale(DES), which consisted of three sub scales,. For each of the sub-scales, the score was computed by dividing the sum of the scores obtained by imputing a value of 5 to the best possible response and 1 to the worst possible response with respect to empowerment by the number of items in the sub-scale. The mean scores of the subscales, managing psychosocial aspects of diabetes consisting of 9 items, dis-satisfaction and readiness to change consisting of 9 items and setting and achieving goals consisting of 10 items The total empowerment score which included all items was calculated as the mean of the 28 items across all the three sub scores(Table 4.5)

Table 4.5 Scores for the sub-scales and DES, Thiruvananathapuram, 2014

Sub-scales	Mean±SD	Mean scores from Tol et al, 2012	Mean scores from Tol et al, 2013
S1. Managing psychosocial aspects of diabetes(range of sum-9-45)	32.99±6.912	27.15±8.20	25.75±5.55
S2. Assessing dissatisfaction and readiness to change (range of sum-9-45)	33.19±6.384	29.03±10.40	24.78±7.54
S3. Setting and achieving diabetes goals (range of sum – 10-50)	36.05±7.815	31.95±11.70	27.63±7.90
S4. Diabetes empowerment scale(range of sum – 28-140)	102.2±19.98	NA	NA

NA-Not available

When compared to DES scores obtained from Iran in east Isfahan (2011) and in Teheran (2010-2011), the level of managing psychosocial aspects of diabetes was much higher with more or less similar standard deviations. The mean scores for assessing dissatisfaction and readiness to change was also higher with lower standard deviations. The mean scores for their ability to set and achieve diabetes goals was also uniformly high with more or less equal scale of variation. On the whole, the empowerment levels in Thiruvananthapuram district when compared to earlier studies in different sites in Iran.

4.6. Identifying the correlates of diabetes empowerment

Bivariate analysis of the various correlates of diabetes empowerment was done. The scores were compared using t –tests for two categories and ANOVA for characteristics which had greater than two categories.

4.6.1. Socio-demographic correlates of diabetes empowerment

The socio-demographic factors considered were age, sex, religion, education, employment status, current living arrangements, availability of health insurance and personal income. The variables associated with diabetes status were duration since diagnosis (that tells the duration of T2DM),current treatment, BS levels and testing frequency. The variables associated with sources of knowledge regarding the disease were health care facility preferred, whether accompanied during visits, doctor preferred, discussion with the doctor, whether attended any DM program, any other chronic illness.

The tests results showed a significant difference in the mean scores of the total score and the three subscales of empowerment with the independent variables –age, sex, education, employment status, current living arrangements, income, blood sugar levels, doctor preferred, discussion with doctor, diabetes mellitus (DM) program attended. The variable showed a significant difference in mean score with the two subscales S1, S3 and S4 while not for S2.(Table 4.8)

Table 4.6 The socio-demographic correlates of diabetes empowerment scale, Thiruvananthapuram, 2014

Variable Name Total(n=300)	S1 [a] Mean±SD (32.99±6.91)	S2[b] Mean±SD (33.19±6.38)	S3[c] Mean±SD (36.05±7.82)	S4[d] Mean±SD (102.23±19.98)
Agegroup				
<45 years 45-49 years 50-54 years 55-59 years 60-64 years 65 and above	35.12±5.47 34.11±6.19 34.33±5.20 32.12±5.42 31.55±8.23 31.66±8.04	34.96±4.78 34.87±5.28 34.04±4.78 32.97±5.98 31.85±7.51 31.77±7.46	38.24±6.44 37.26±6.84 37.02±5.82 35.67±7.62 34.15±8.49 34.96±9.28	108.33±14.83 106.24±16.75 105.40±14.67 100.76±17.78 97.55±23.55 98.39±23.74
*P value	0.020	0.018	0.064	0.019

Sex				
Male	34.41±6.06	34.54±5.22	37.91±6.86	106.86±16.71
Female	31.80±7.36	32.06±7.03	34.48±8.23	98.34±21.64
*P value	0.001	0.001	0.000	0.000
Education				
Up to	31.97±6.83	32.12±6.51	34.78±7.73	98.88±20.03
Highschool	36.00±6.25	36.34±4.77	39.79±6.83	112.13±16.26
Above High School				
*P value	0.000	0.000	0.000	0.000
Occupation				
Employed	33.85±6.26	33.96±5.54	36.59±7.11	104.40±17.49
Unemployed	32.29±7.35	32.55±6.95	35.60±8.34	100.44±21.70
*P value	0.052	0.057	0.275	0.081
Current living arrangement				
with spouse	33.57±6.40	33.73±5.89	36.65±7.29	103.95±18.33
Without spouse	30.59±8.35	30.97±7.78	33.52±9.36	95.07±24.64
*P value	0.013	0.003	0.013	0.012
Income				
No income	31.30±7.98	31.75±7.74	34.45±8.96	97.50±23.91
<1000	33.28±5.89	33.13±5.32	36.64±6.17	116.25±12.46
1001-10000	32.52±6.43	32.74±5.83	35.17±7.66	110.07±15.59
10001-20000	36.17±4.85	35.60±4.44	39.27±5.97	111.03±14.15
20001-30000	35.40±6.23	36.40±4.12	38.27±5.35	100.44±18.20
>30000	37.12±3.48	37.88±3.64	41.25±5.75	102.87±16.17
*P value	0.003	0.003	0.008	0.001
Health Insurance				
Yes	32.69±7.65	32.72±6.885	35.85±8.56	101.26±22.05
No	33.28±6.05	33.63±5.872	36.22±7.08	103.13±17.87
*P value	0.462	0.213	0.685	0.421

a Managing psycho social aspects of Diabetes; b Assessing dissatisfaction and readiness to change; c Setting and achieving goals.;d total empowerment.(P<0.1)

The mean scores for all the sub-scales of DES and DES decreased with increasing age. Males had higher DES scores when compared to females. Persons educated above high school levels had higher DES scores when compared to those educated upto high school. Those employed had higher DES scores when compared to those unemployed. The participants who currently were living with their spouses had higher DES scores when compared to those living without their spouses. Higher personal incomes were associated with higher DES scores. All these socio-demographic variables significantly differed across each of their levels for all of the sub-scores S1, S2, S3 and S4. Presence or absence of health insurance alone did not show and variation across all the sub-scores.

4.6.2. Diabetes status correlates of diabetes empowerment

Diabetes status correlates including duration of diabetes, testing frequency, blood sugar levels, current treatment availed of the various sub scales of diabetes empowerment were examined using t-test and ANOVA (when there were more than two categories involved). The results are summarised in Table 4.7

Table4.7 The diabetes status correlates of diabetes empowerment scale, Thiruvananthapuram, 2014

Diabetes status characteristics	S1 [a] Mean±SD	S2[b] Mean±SD	S3[c] Mean±SD	S4[d] Mean±SD
Duration of diabetes diagnosis				
Do not know	32.75±6.99	33.06±6.64	35.29±7.88	98.00±0.00
1- 4 years	32.16±7.08	32.70±6.65	35.38±8.00	101.11±20.31
5-9years	33.85±6.57	33.08±6.04	37.51±6.78	100.24±20.68
10-14 years	36.11±5.75	35.82±4.45	39.89±7.21	104.44±18.46
15 years and above	32.75±6.99	33.06±6.64	35.29±7.88	111.82±15.61
*P value	0.047	0.144	0.017	0.077

Testing frequency				
≤ 1 month	34.17±5.94	34.34±5.45	37.53±7.17	106.04±17.29
≥ 1 month	31.49±7.75	31.73±7.17	34.16±8.22	97.39±22.07
*P value	0.001	0.001	0.000	0.000
Blood sugar levels				
Controlled	31.81±7.58	35.98±4.01	35.98±4.02	100.47±20.32
Uncontrolled	27.94±7.50	32.76±6.42	35.54±7.93	111.77±12.22
Do not remember	36.17±4.53	31.74±7.43	33.83±8.58	84.00±19.57
Do not know	32.17±7.10	27.19±6.73	28.88±6.88	97.38±22.66
*P value	0.000	0.000	0.000	0.000
Type of current treatment				
Pharmacological Treatment	32.89±7.01	33.15±6.48	35.95±7.91	101.99±20.32
Non Pharmacological Treatment	34.45±5.32	33.75±5.04	37.40±6.31	105.60±14.26
*P value	0.330	0.687	0.424	0.436

a Managing psycho social aspects of Diabetes; b Assessing dissatisfaction and readiness to change; c Setting and achieving goals.;d total empowerment,(*P<0.1)

The diabetes empowerment scores increased with increasing duration of diabetes experience, except for the longest duration of experience, viz, 15 years and above. This distortion could be due to the smaller number of cases in this category, namely 28 persons, just about 9.3 percent of the total sample.

Testing frequencies of less than one month was associated with higher diabetes empowerment when compared to less frequent testing for blood sugar levels – namely frequencies of once in more than a month. Patients who stated (with evidence) that their blood sugar levels were controlled during their last test had higher diabetes empowerment scores when compared to those who said that their blood sugar levels were not controlled. All these correlates were statistically significant across the categories for all the sub-scales, S1, S2, S3 and S4. However, the type of current treatment, whether or not

pharmacological treatment was used, did not show any significant difference across the sub-scales.

4.6.3. Sources of knowledge regarding the disease and prevalence of other chronic conditions correlates of diabetes empowerment

The associations between the various sources of knowledge regarding diabetes and prevalence of other chronic conditions and the diabetes empowerment were also examined (table 4.8).

Table 4.8 The sources of knowledge regarding diabetes and prevalence of other chronic conditions - correlates of diabetes empowerment scale, Thiruvananthapuram, 2014

Sources of Knowledge Regarding Diabetes and Prevalence of Other chronic illness	S1 [a] Mean±SD	S2[b] Mean±SD	S3[c] Mean±SD	S4[d] Mean±SD
Seeing preferred doctor				
Yes	35.43±4.692	35.19±3.919	38.98±5.712	109.60±12.55
No	31.28±7.681	31.78±7.349	33.98±8.392	87.04±22.47
*P value	0.000	0.000	0.000	0.000
Discussion with Doctor				
Yes	34.70±4.679	34.71±4.090	38.37±5.606	107.78±12.71
No	30.61±8.641	31.07±8.187	32.79±9.212	94.47±25.12
*P value	0.000	0.000	0.000	0.000
DM program Attended				
Yes	34.10±6.097	34.68±5.267	37.43±6.824	106.21±16.76
No	31.87±7.506	31.69±7.051	34.64±8.5	98.21±22.11
*P value	0.005	0.000	0.002	0.000
Presence of other chronic illness				

Yes	33.21±6.65	33.30±5.93	36.54±7.62	103.05±18.82
No	32.81±7.15	33.10±6.77	35.62±7.98	101.54±20.94
*P value	0.615	0.793	0.309	0.827

a Managing psycho social aspects of Diabetes; b Assessing dissatisfaction and readiness to change; c Setting and achieving goals.;d total empowerment;(*P<0.1)

When a patient was able to meet their preferred doctor for treatment, their DES scores were higher, when compared to those who could not meet their preferred doctor. The patients who discussed matters relating to their health condition with their physicians tended to have higher scores when compared to those who had not discussed similarly. Those who attended educational programmes regarding diabetes mellitus tended to have higher DES scores when compared to those patients who had not attended such programs. The differences within each of these sources of knowledge were significant, for every one of the sub-scales of DES.

4.6.4. Identifying the correlates of diabetes empowerment after adjusting for associations

The outcome variable DES, was a continuous variable. Therefore, a parsimonious ANOVA model was build to identify the significant correlates of diabetes empowerment across all types of correlates, namely socio-demographic, diabetes status and sources of knowledge regarding diabetes. Age and sex were found to be strongly associated with DES. Therefore this model was build separately for different categories of age and sex. Among the socio-demographic variables, personal income, education, employment were found to have strong associations on the basis of chi-squares. Therefore only employment status was retained among the three socio-economic variables, in the multivariate model. The other variable that was included was current living arrangement.

Among the correlates of diabetes status, duration of diabetes experience and testing frequency were strongly associated. Therefore, testing frequency and duration of diabetes

experience was retained for the multivariate model. However, duration of diabetes experience was correlated with age. Therefore duration of experience was used as a control, instead of age.

Among the group of variables used to examine sources of knowledge regarding diabetes and prevalence of other chronic conditions, the option of seeing the preferred doctor, discussing about the condition with the doctor and attending DM education programs were strongly associated. Moreover, the impact of assessing whether diabetes educational programs make a difference was one of the stated objectives of the study. Therefore both, whether or not the participant attended a DM education program and whether the participant could see a doctor of their preference were retained in the multivariate model. The multivariate model was built with all of the above mentioned variables, current living arrangements (with spouse/without spouse), employment status(employed/unemployed), diabetes educational program attended (attended/not attended), seeing a preferred doctor ((yes/no) and testing frequency (<=one month, >one month), being included in the

ANOVA for all the three sub-scores and the diabetes empowerment score. The results are given in table 4.9. The analysis was repeated for each of the control categories of duration of diabetes experience and sex.

It was found that in multivariate analysis using ANOVA for each of the three sub scales and for the diabetes empowerment scale, out of the five variables analysed only current living arrangements and attending a diabetes mellitus program showed a significant association with the empowerment scores. The association of empowerment scores with current living arrangements and attending an educational program was found to be significant only for males who have been diagnosed as diabetic for nine years or below , Attending an educational program was associated with the subscale assessing

dissatisfaction and readiness to change if it was in the initial period of diagnosis. When the duration of diabetes was more than 9 years for there was no association of empowerment scores with any of the factors for men. The same analysis was repeated for females and it was found that irrespective of the duration of having diabetes none of the factors were associated with empowerment.

Table 4.9 Multi variate analysis showing the associated factors with empowerment

Variable Name	S1[a]		S2[b]		S3[c]		S4[d]	
	F ratio	*P value	F ratio	*P value	F ratio	*P value	F ratio	*P value
4.9.1 When the diabetes duration for < 9 years for males(n=106)								
Current living arrangement	1.251	0.231	0.579	0.934	0.925	0.572	1.488	0.000
DM program attended	0.776	0.746	2.135	0.006	1.312	0.181	1.427	0.170
Seeing the preferred doctor	0.926	0.563	1.613	0.059	1.491	0.093	1.288	0.077
Testing Frequency	1.412	0.133	1.321	0.178	0.957	0.531	0.906	0.463
Employment status	0.958	0.524	0.584	0.932	0.637	0.898	0.918	0.406
4.9.2 When diabetes duration <9 years for females (n=126)								
Current living arrangement	0803	0.716	1.488	0.092	0.923	0.572	1.396	0.096
DMprogram attended	1.045	0.418	1.427	0.117	1.91	0.181	0.753	0.850
Seeing the preferred doctor	1.464	0.104	1.288	0.195	1.941	0.093	1.057	0.408
Testing Frequency	0.942	0.542	0.906	0.590	0.643	0.531	0.918	0.618
Employment status	1.370	0.147	0.918	0.576	1.267	0.898	1.118	0.327
4.9.3 When Diabetes duration > 9 years for males(n=31)								
Current living arrangement	0.439	0.909	0.364	0.968	0.341	0.979	0.629	0.819
DM program attended	0.362	0.949	0.764	0.690	0.676	0.775	0.650	0.803

Seeing the preferred Doctor	0.922	0.533	0.717	0.732	0.910	0.576	0.898	0.601
Testing Frequency	1.774	0.132	1.342	0.284	1.087	0.442	0.621	0.825
Employment status	0.445	0.906	0.995	0.499	0.877	0.603	0.650	0.803
4.9.4 When Diabetes Duration was > 9 years for females(N=36)								
Current living arrangement	1.43	0.233	1.456	0.213	1.262	0.308	1.117	0.442
DMprogram attended	1.178	0.370	1.331	0.271	1.764	0.117	2.750	0.042
Seeing the preferred Doctor	0.809	0.670	1.572	0.170	0.821	0.647	0.661	0.809
Testing Frequency	0.902	0.586	0.736	0.725	1.262	0.309	0.938	0.574
Employment status	1.015	0.490	3.587	0.004	3.857	0.004	0.000	nil

a Managing psycho social aspects of Diabetes; b Assessing dissatisfaction and readiness to change; c Setting and achieving goals.;d total empowerment; *p<0.05

CHAPTER 5
DISCUSSION

5.1 Assessing the levels of diabetes empowerment

Actively being informed and educated regarding the disease condition is an essential part of an empowerment approach when confronted with a chronic disease like diabetes. This approach would help individuals to self manage the disease and deal with it in a positive manner .In the study population it was found that the elderly population (65 and above) constituted more of women. The reasons for this may be that women live longer while mortality among elderly men is high due to various morbidities. The age group of below 45 had a higher proportion of men. This could be indicate that more number of men were screened for and/or getting diabetes at a younger age and at the same time women of same age were not accessing healthcare facilities for routine check up where by they skip the screening programs conducted for the chronic disease conditions. The reasons for this could be related to their responsibilities for child rearing, or lack of financial resources or both. It is also to be noted that the study population had a high proportion of women who did not have a personal income. Most of the men earned < 10,000 which shows that many of the participants were from lower middle class families.

Though the results showed 100 percent literacy, most of the women remain unemployed. Current living arrangements can be considered a proxy for family support. There have been studies that show that family support is essential for coping with chronic conditions like diabetes.[36]Majority of the study population used health insurance which showed that people are to an extent aware of the schemes available for availing medical services at a affordable price. Around 43.3 percent of the population had the diabetes diagnosed in < five years, possibly because there are active screening programs being conducted to identify the people affected with chronic conditions like diabetes.

It was found that different treatment facilities that were being utilized by the participants. When majority of them followed allopathic treatment a smaller proportion followed homeopathic and ayurvedic treatment. Almost half of the study population had their blood glucose checked once in a month. There were a few participants who could not recollect the sugar levels when last checked, may be due to their age and there were a few who did not know what their sugar levels were. To practise non pharmacological treatment modalities like diet control and exercise need high motivation and be empowered. The proportion of participants following this was a very small percent - the reason being patients did not have adequate time and many preferred taking drugs which was an easy option.

Around 40 percent of the population depended on government health care facilities since it was accessible to them and was providing free treatment. Women were often accompanied by some one to hospitals/clinics while men were not. It should also be noted that men were able to see a doctor of their choice while many women could not. This may be due to the waiting time required to see the doctor that made women opt to see a doctor on duty. Since more number of men could see a doctor they preferred they could also discuss about the condition with the doctors. Men were more aware about the disease condition as the study shows more number of men attended DM program, had the choice of seeing a doctor they preferred and to have discussions with the doctor regarding the disease. Though the elderly constituted mostly of women it was found that women were more in number when other chronic illness experiences were also considered. This could be indicative of an unmet need for women to be screened and treated for chronic conditions.

5.2 Identifying the correlates of diabetes empowerment

The current study findings assessed the empowerment levels of self reported diabetic cases and the factors associated with this empowerment. When compared to other studies conducted in Iran, the current study showed that the study population had better empowerment levels.[32,52] The variations in the scores in these two studies and the current study may be due to the differences in the level of education attained and awareness regarding the disease among the study subjects. Socio-demographic factors like age, sex, education, occupation, income and current living arrangements showed a significant association with the empowerment scores, similar to the study conducted in Iran and India.[32,33] .To manage the psychosocial aspects of diabetes and to set up goals and to put it in to a workable plan these factors were essential. The diabetic status factors like duration of diabetes diagnosis and testing frequency and health care facility factors like discussing about the disease with the doctor, having option of consulting a doctor the patient prefer to and attending a diabetes education program also had a significant association with the empowerment scores.[33,37,52] Patients who had diabetes under control had higher empowerment scores, which may be indicate that blood sugar levels could validate empowerment. The health care facility factors increase the scope of shared decision-making about the treatment modalities and this could give the patient an autonomy.[52]

The factor age showed an inverse relation with duration of diabetes diagnosis and empowerment.[53,54] This inverse relation implies that if the duration of the experience with the disease is more, the ability of the patient to manage the disease on his/her own is more; irrespective of age.

The two most important factors affecting empowerment in men were current living arrangements which are a proxy for family support, associated with total empowerment

and attending diabetes education program for the subscale: dissatisfaction and readiness to change. These factors showed association in the initial years after diagnosis of the disease. Family support is very essential in managing such chronic conditions:by making reminders regarding taking the medicines at the right time, if any difficulty in carrying out the self care activities the belief that “I can ask for help”, finding and assessing the factor that can help take the disease along with routine activities in a positive manner and setting up targets for those positive changes and achieving it. It can be so because the very knowledge of having a disease would make one aware and be cautious. Therefore a keen interest to control the disease at the earliest may become a priority and if at this time attending an educational program can help the patient realise the problems and solutions in handling a chronic condition like diabetes. The result also suggest that if patients are not educated at the earliest years of diagnosis there are chances of morbidities increasing due to lack of knowledge. Similar results have been found in an diabetes empowerment study conducted in Haryana recently. In the current study, duration of the study did not have any effect on the empowerment scores for women. None of the identified socio-demographic, diabetes status related factors and sources of knowledge regarding the disease, were associated with empowerment scores for women.

There have been studies where glycaemic control was a validation of empowerment among diabetes patients unlike the current study which did not show blood sugar levels having much significance with empowerment scores in multivariate analysis. This could be indicative of social desirability that may have affected answers to the related to the construct. The fasting month of Muslims also had an influence on the blood sugar levels and that probably one reason for higher proportion of uncontrolled diabetes in the study population.

Shared decision making is essential for the management of diseases like diabetes. In the study population it was found that mostly patients preferred to see a doctor that was difficult since the doctors available for consultation was not always the same in government hospitals. This is due to reasons such as staff shortage in the rural government hospitals. Patient overload causing longer waiting time is also an issue that would reduce time for provider-patient interaction. Studies show that providing information regarding the conditions by the health care provider, specially doctors help individuals to deal with the disease in a positive manner.[50] Therefore education for both patients and health care providers become a priority to help handle the disease. Empowering the patients at the individual level through educational programs is therefore is a key to managing chronic conditions like diabetes.

5.3. Strengths and limitations of the study

The strength of the study was that it was a community based survey conducted by a single investigator using a validated scale for use in Indian setting. The study was conducted among self reported diabetes cases, most of whose diabetic status was validated with prescriptions and recent testing of blood sugar levels.

Since the study was a cross sectional associations between the variables should be viewed with caution. The blood sugar levels reported cannot be comparable since the laboratory tests would have been done in different laboratories. Recall bias and social desirability could also be an issue with respect to reported attitudes and knowledge.

5.4 Conclusions

The study showed that in comparison to a developing country like Iran the empowerment levels of diabetes patients in a rural area of Kerala, India, were better. But then more

educational and awareness programs are required to empower patients in the initial stages of the disease, in order to make them believe and manage the disease on their own. The study shows that men were more empowered than women since they had the choice of consulting the doctor they preferred, discussed about the condition with the doctor, and attended more DM programs than women. The study also shows that for males in the initial period of diagnosis of the disease if proper guidance and family support is given, they would be able to cope up with the disease. But for females none of the factors were associated with empowerment. Therefore, there is a need to identify alternative avenues to empower women to self manage diabetes.

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Annexures

Annexure I

Title: Assessing the level of empowerment to manage care among patients with type 2 diabetes mellitus in Trivandrum District, Kerala

Informed Consent

Sl.no. of the questionnaire:

"Namaskaram"- my name is *xxxx* and I am doing Masters degree in Public health at Achutha Menon Center for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram. As part of the work for the degree, I am conducting a study among people with Diabetes Mellitus living in the rural area of Thiruvananthapuram, to assess the level of Empowerment to manage care among them.

The purpose of the study is to gather information that will help know how people live with Diabetes mellitus and if the participation in control and prevention programmes for Diabetes are helpful to people like you. I would like to interview you for this study. This would take about 20-30 minutes of your time. There will be no direct benefits to you for participating in this interview.

Everything you say will remain private and confidential. Your name will not be used in any report but your ideas and experiences will be of great help to make better strategies in order to help people with Diabetes manage their condition in future.

You are free to refuse to answer any or all of the questions at any point of time if you feel so. If you need any further clarifications about this study, you can contact me and my contact number is *xxxx*. For any specific clarifications about the ethical review of this study you can contact the Member Secretary of the SCTIMST-Ethics Committee that reviewed and cleared this study for undertaking research. Her name is *xxxx* and contact number is *xxxx.*

If you are willing to participate in this study, please indicate it by signing the consent form that follows.

Sl no of the questionnaire:

Yes, the respondent has agreed to the interview

No, the respondent did not agree to the interview

Signature/Left thumb impression ……

Or

The respondent is not willing to sign or give thumb impression (verbal consent)

Signature of the witness…….

Name and address of the witness: .....

If you are not willing to participate in the interview, then thank you for your time.

Name of the respondent:……..

Address:……

Annexure II

Interview schedule to assess the level of empowerment to manage care among patients with type 2 diabetes mellitus in

Trivandrum District, Kerala

Serial Number	:
Name	:
Address	:
Date of Interview	:

1.	How many years old were you on your last birthday?	_____ years	
2.	Sex	male 1	female 2
3.	What is your religion?	Hindu 1 Christian 2 Muslim 3 Others (Specify) -- 4	
4.	What is your caste?	General 1 SC 2 ST 3 OBC 4 Others 5	

5.	Up to which level have you been educated?	No formal education 1 (class4)completed primary school 2 (class7)completed upper primaryschool 3 completed high school 4 Completed higher secondary 5 completed diploma /degree 6 post graduation and above 7
6.	What is your occupation?	clerical 1 manual labourers/unskilled workers 2 Professionals 3 Home maker 4 Unemployed 5 self employed 6 retired person 7
7.	What is your personal income per month?	_____
8.	What is your current living arrangement?	with spouse 1 with spouse and children 2 with children only 3 with parents 4 living alone 5 others(specify) --------- -6
9.	How long ago were you told by a doctor that you had diabetes?	_____ years

10.	What is the current treatment that you are following?	On Insulin 1 On oral drugs 2 On exercise 3 On diet control 4 Others 5 Multiple answers are possible
11.	If on Insulin how do you take injections?	self administer 1 go to the health centre 2 go to health professionals 3 friends 4 family member living with me 5 others(specify)_____6
12.	How frequently did you get your blood sugar checked in the last one year?	Daily 1 Weekly2 Once in a month3 Once in two months4 Once in 3- 6months5 >6 months 6
13.	When did you last check your blood sugar level?	Today 1 Daybefore 2

		One week ago 3 Two week ago 4 One month ago 5 3-6 months ago 6 Six months ago7 More than six months ago 8	
14.	When you last checked, what was your Blood sugar level?	____ mg/dl Do not remember 1 Do not know 2	
15.	Who paid for you to test your sugar levels last time?	Self 1 Family member 2 Friends3 Lab tests are done for free4 Others 5	
16.	Last time who paid for the medicines you take for Diabetes?	Self 1 Family member 2 Friends 3 Treatment is free4 Others 5	
18.	Do you often visit the health care facility?(often –more than twice in a month)	Yes 1	No 2
19.	Why do you prefer the above mentioned health care facility for		

	Diabetes?	_____	
20.	Did some one accompany you to the health care facility last time for Diabetes treatment?	Yes 1	No2
21.	Is there a Doctor you prefer to consult in the health facility for Diabetes treatment?	Yes 1	No2
22.	Do you discuss with the doctor about your diabetes treatment?	Yes 1	No 2
23.	If no 2, With whom do you share your concern/clarifications regarding the disease?	Friends 1 Partner 2 Relatives 3 Other health professionals 4 People with the same condition5 Others(specify)_____ 6	
25.	Have you ever attended Diabetes Education program?	Yes 1	No2
26.	If yes, what was the educational program?	Video 1 A talk 2 Counselling by nutritionist3 Palmphet/ brochure4 A book 5	

		Others(Specify)-----6	
27.	If yes, what did you understand from the educational program?	About diet control and exercise, reducing weight 1 About various treatments available 2 About the signs and symptoms of the disease, complications 3 To check blood glucose at regular intervals 4 Do not remember 5 Do not know 6 Others 7	
28.	Do you have any other chronic illness?	Yes 1	No 2
29.	If Yes , what are the chronic illnesses that you have?	Heart Disease1 Hypertension 2 High cholesterol 3 Others4	
30.	Do you have Health Insurance?	Yes 1	No 2
31.	In what ways have Diabetes as a disease condition changed your life?	Completely stopped taking sweets 1 Reduced the level of sugar intake 2 Carry sweets along to prevent tiredness and giddiness 3 Started Wearing sandals/chappals all the time(even when at home) as part of foot care 4 Started walking for some distance	

		everyday 5 Stopped attending festivals / parties 6 No particular timing set for food 7 Others if any (Specify)____ 8 Multiple answers possible

Attitude towards Diabetes

'I am going to read out a set of statements about the nature of the care you take about managing your diabetes. Please let me know if you agree strongly, agree, are neutral, disagree or strongly disagree with the statements.'

Sl no	In general I believe that I	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
1.	...know what part(s) of taking care of my diabetes that I am satisfied with					
2.	...know what part(s) of taking care of my diabetes that I am dissatisfied with					
3.	...know what part(s) of taking care of my diabetes that I am ready to change.					
4.	...know what part(s) of taking care of my diabetes that I am not ready to change.					
5.	...can choose realistic					

	diabetes goals.					
6.	...know which of my diabetes goals are **most** important to me.					
7.	...know the things about **myself** that either help or prevent me from reaching my diabetes goals.					
8.	...can come up with good ideas to help me reach my goals.					
9.	...am able to turn my diabetes goals into a workable plan					
10.	...can reach my diabetes goals once I make up my mind.					
11.	...know which **barriers** make reaching my diabetes goals more difficult.					
12.	...can **think** of different ways to overcome barriers to my diabetes goals					
13.	...can try out different ways of overcoming barriers to my diabetes goals.					
14.	...am able to decide which way of overcoming barriers					

	to my diabetes goals works best for me					
15.	...can tell how I'm feeling About **having** diabetes.					
16.	...can tell how I'm feeling about **caring** for my diabetes .					
17.	...know the ways that having diabetes causes stress in my life					
18.	...know the **positive** ways I cope with diabetes-related stress.					
19.	...know the **negative** ways I cope with diabetes-related stress.					
20.	...can cope well with diabetes- related stress					
21.	...know where I can get support for having and caring for my diabetes.					
22.	...can ask for support for having and caring for my diabetes when I need it.					
23.	...can support myself in dealing with my diabetes.					

24.	...know what helps me stay motivated to care for my diabetes					
25.	..can motivate myself to care for my diabetes					
26.	...know enough about diabetes to make self-care choices that are right for me.					
27.	...know enough about my-self as a person to make diabetes care choices that are right for me.					
28.	...am able to figure out if it is worth my while to change how I take care of my diabetes.					

Annexure III

കേരളത്തിൽ തിരുവനന്തപുരം ജില്ലയിലെ പ്രമേഹരോഗികളുടെ ഇടയിൽ അവരുടെ പ്രമേഹ രോഗം കൈകാര്യം ചെയ്യുന്നതിൽ എത്രത്തോളം ശാക്തീകരിക്കപ്പെട്ടിരിക്കുന്നുവെന്ന് മനസ്സിലാക്കുവാനുള്ള ഒരു പഠനം

വിവരങ്ങൾ വ്യക്തമാക്കിയുള്ള സമ്മതപത്രിക

ചോദ്യാവലി ക്രമനമ്പർ :

നമസ്കാരം എന്റെ പേര് മിസ്. അന്നാ നൈനാൻ. ഞാൻ തിരുവനന്തപുരത്തുള്ള അച്യൂതമേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസ്, ശ്രീ ചിത്തിര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആന്റ് ടെക്നോളജിയിൽ പൊതുജനാരോഗ്യം എന്ന വിഷയത്തിൽ ബിരുദാനന്തര ബിരുദം ചെയ്യുന്നു. എന്റെ പഠനത്തിന്റെ ഭാഗമായി ഞാൻ തിരുവനന്തപുരം ജില്ലയിലെ ഗ്രാമങ്ങളിൽ ഉള്ള പ്രമേഹരോഗികളുടെ ഇടയിൽ അവരുടെ പ്രമേഹ രോഗം കൈകാര്യം ചെയ്യുന്നതിൽ എത്രത്തോളം ശാക്തീകരിക്കപ്പെട്ടിരിക്കുന്നുഎന്ന് അറിയുവാനായി ഒരു പഠനം നടത്തുന്നുണ്ട്.

പ്രമേഹ രോഗികൾ എങ്ങനെ ആ രോഗവുമായി ജീവിക്കുന്നുവെന്നും ആ രോഗാവസ്ഥ നിയന്ത്രിക്കുന്നതിനും തടയുന്നതിനുംവേണ്ടിയുള്ള പരിപാടികളിൽ പങ്കെടുക്കുന്നത് കൊണ്ട് നിങ്ങളെപ്പോലെയുള്ളവർക്ക് ഇത് എത്രത്തോളം സഹായകരമാകുന്നുവെന്നും അറിയുന്നതിനുവേണ്ടിയാണ് ഈ പഠനം നടത്തുന്നത്. അതിന്റെ ഭാഗമായി നിങ്ങളുമായി എനിക്ക് അഭിമുഖ സംഭാഷണം നടത്താൻ താൽപ്പര്യമുണ്ട്. ഇതിന് ഏകദേശം 20-മുതൽ 30 മിനിട്ടുവരെ സമയം എടുത്തേക്കും. ഈ പഠനത്തിൽ പങ്കെടുക്കുന്നതുകൊണ്ട് നിങ്ങൾക്ക് പ്രത്യക്ഷത്തിൽ നേട്ടങ്ങൾ ഒന്നും ഇല്ല.

നിങ്ങൾ തരുന്ന എല്ലാ വിവരങ്ങളും സ്വകാര്യമായിരിക്കും. നിങ്ങളുടെ പേര് പഠന റിപ്പോർട്ടിന്റെ ഒരു ഭാഗത്തും പരാമർശിക്കപ്പെടുകയില്ല. പക്ഷേ നിങ്ങളുടെ ആശയങ്ങളും അനുഭവങ്ങളും ഭാവിയിൽ പ്രമേഹ രോഗികൾക്ക് ഈ രോഗം കൈകാര്യം ചെയ്യാമെന്ന് ഉള്ളതിന് സഹായകരമായിരിക്കും. നിങ്ങൾക്ക് ഈ അഭിമുഖ സംഭാഷണത്തിൽ നിന്നും എപ്പോൾ വേണമെങ്കിലും മുഴുവനുമായോ ഭാഗീകമായോ പിന്മാറുന്നതിനുള്ള സ്വാതന്ത്ര്യം ഉണ്ടായിരിക്കും. ഈ പഠനത്തെപ്പറ്റി കൂടുതൽ വ്യക്തത നിങ്ങൾക്ക് ആവശ്യമാണെങ്കിൽ എന്നെ ഈ ഫോൺ നമ്പറിൽ 9400714665 ൽ ബന്ധപ്പെടാവുന്നതാണ്. ഈ പഠനത്തിന്റെ ധാർമ്മീകതയെപ്പറ്റി കൂടുതൽ വ്യക്തത ആവശ്യമെങ്കിൽ താങ്കൾക്ക് എസ്. സി.റ്റി.ഐ.എം.എ

സ്.റ്റി ധാർമ്മിക വിഷയങ്ങളെക്കുറിച്ചുള്ള കാര്യാലോചന സഭയുടെ മെമ്പർ സെക്രെട്ടറി ഡോ: മാലാ രാമനാഥനുമായി ഈ ഫോൺ നമ്പറിൽ ;;;;ബന്ധപ്പെടാവുന്നതുമാണ്.

താങ്കൾക്ക് ഈ പഠനത്തിൽ പങ്കെടുക്കുന്നതിന് താൽപ്പര്യമുണ്ടെങ്കിൽ താഴെപ്പറയുന്ന സമ്മതപത്രത്തിൽ ഒപ്പിട്ട് നൽകേണ്ടതാണ്.

ചോദ്യാവലി സീരിയൽ നമ്പർ :

☐ അതെ, ഉത്തരം നൽകുന്ന ആൾക്ക് അഭിമുഖ സംഭാഷണത്തിന് സമ്മതമാണ്.
☐ ഇല്ല, ഉത്തരം നൽകുന്ന ആൾക്ക് അഭിമുഖ സംഭാഷണത്തിന് സമ്മതമല്ല.

കൈയ്യൊപ്പ്/ഇടതുതള്ളവിരൽ അടയാളം

അല്ലെങ്കിൽ

ഒപ്പ് ഇടുന്നതിനോ, വിരൽ അടയാളം പതിക്കുന്നതിനോ ഉത്തരം പറയുന്ന ആളിന് സമ്മതമല്ല. (വാക്കാലുള്ള സമ്മതം)

സാക്ഷിയുടെ ഒപ്പ് _____
സാക്ഷിയുടെ പേര് _____
സാക്ഷിയുടെ മേൽവിലാസം _____
_____

ഈ അഭിമുഖ സംഭാഷണത്തിൽ പങ്കെടുക്കുന്നതിന് താങ്കൾക്ക് താൽപ്പര്യം ഇല്ലായിരുന്നുവെങ്കിലും ഇത്രയും സമയം എനിക്കുവേണ്ടി ചെലവഴിച്ചതിന് വളരെ നന്ദി. ഉത്തരം പറയുന്ന ആളുടെ പേര് : _____
മേൽവിലാസം : _____
_____

Annexure IV

അഭിമുഖസംഭാഷണം

കേരളത്തിൽ തിരുവനന്തപുരം ജില്ലയിലെ പ്രമേഹരോഗികൾക്ക് അവരുടെ പ്രമേഹ രോഗം കൈകാര്യം ചെയ്യുന്നതിൽ എത്രത്തോളം ശാക്തീകരിക്കപ്പെട്ടിരിക്കുന്നു എന്ന് മനസ്സിലാക്കുന്നതിനുള്ള അഭിമുഖസംഭാഷണം.

ചോദ്യാവലി ക്രമ നമ്പർ :

പേര് :

മേൽവിലാസം :

അഭിമുഖസംഭാഷണ തീയതി :

1.	കഴിഞ്ഞ ജന്മദിനത്തിൽ താങ്കൾക്ക് എത്ര വയസ്സാ യിരുന്നു?	------- വർഷം
2.	ലിംഗം	പുരുഷൻ 1 സ്ത്രീ 2
3.	നിങ്ങളുടെ മതം ഏതാണ്?	ഹിന്ദു 1 ക്രിസ്ത്യാനി 2 മുസ്ലീം 3 മറേറതെങ്കിലും 4 (വ്യക്തമാക്കുക)
4.	നിങ്ങളുടെ ജാതി താണ്?	ജനറൽ 1 പട്ടികജാതി 2 പട്ടികവർഗ്ഗം 3 പിന്നാക്ക സമുദായം 4

		മറെറന്തെങ്കിലും 5 (വ്യക്തമാക്കുക)
5.	നിങ്ങൾ ഏതുവരെ പഠിച്ചിട്ടുണ്ട്?	ഔപചാരികവിദ്യാഭ്യാസംഇല്ല 1 (നാലാംക്ലാസ്സ്) പ്രാഥമിക വിദ്യാഭ്യാസം പൂർത്തിയാക്കി 2 (ഏഴാം ക്ലാസ്സ്) മിഡിൽ സ്കൂൾ വിദ്യാഭ്യാസം പൂർത്തിയാക്കി 3 ഹൈസ്കൂൾവിദ്യാഭ്യാസം പൂർത്തിയാക്കി 4 ഹൈയർസെക്കൻഡറി പൂർത്തിയാക്കി 5 ഡിപ്ലോമ / ബിരുദം പൂർത്തിയാക്കി 6 ബിരുദവും ബിരുദാന ന്തരബിരുദത്തിനും മുകളിൽ 7
6.	താങ്കളുടെ തൊഴിൽ എന്താണ്?	ഗുമസ്തപണി 1 കൈത്തൊഴിലാളി / കൂലിപ്പണി 2 പ്രൊഫഷണൽ 3 വീട്ടുജോലി 4 തൊഴിൽ ഇല്ല 5

		സ്വയം തൊഴിൽ 6 പെൻഷൻ ആയി 7
7.	താങ്കളുടെ മാസവരുമാനം എത്രയാണ്?	--
8.	താങ്കളുടെ നിലവിലുള്ള ജീവിത സാഹചര്യം എന്താണ്?	ജീവിതപങ്കാളിയോടൊപ്പം 1 ജീവിതപങ്കാളിക്കും കുട്ടികൾക്കുമൊപ്പം 2 കുട്ടികളുമായി മാത്രം 3 മാതാപിതാക്കളോടൊപ്പം 4 ഒറ്റയ്ക്ക് 5 മറ്റെന്തെങ്കിലും (വ്യക്തമാക്കുക) 6
9.	താങ്കൾക്ക് പ്രമേഹരോഗമുള്ളതായി എത്ര നാൾ മുൻപാണ് ഡോക്ടർ പറഞ്ഞത് ?	--
10.	താങ്കൾ നിലവിൽ ഏത് ചികിത്സാരീതിയാണ് പിന്തുടരുന്നത്?	ഇൻസ്സുലിൻ 1 കഴിക്കുന്ന മരുന്നുകൾ 2 വ്യായാമം 3 ഭക്ഷണ നിയന്ത്രണം 4 മറ്റെന്തെങ്കിലും 5
11.	ഇൻസ്സുലിൻ ഉപയോഗിക്കുന്നെങ്കിൽ, എങ്ങനെയാണ് താങ്കൾ കുത്തിവയപ്പ് എടുക്കുന്നത്?	സ്വയം കുത്തിവയ്ക്കുന്നു 1 ആരോഗ്യകേന്ദ്രത്തിൽ പോകും 2 ആരോഗ്യരംഗത്ത് പ്രവർത്തിക്കുന്നവരിൽനിന്ന് 3

		സുഹൃത്തുക്കൾ 4 എന്നോടൊത്ത് താമസിക്കുന്ന കുടുംബാംഗം 5 മറെറന്തെങ്കിലും (വ്യക്തമാക്കുക) 6
12.	കഴിഞ്ഞ ഒരു വർഷത്തിൽ താങ്കളുടെ രക്തത്തിലെ പഞ്ചസാരയുടെ അളവ് പതിവായി പരിശോധിച്ചി രുന്നത് എപ്പോഴൊക്കെയാണ്?	ദിവസവും 1 ആഴ്ചയിൽ ഒരിക്കൽ 2 മാസത്തിലൊരിക്കൽ 3 രണ്ട് മാസത്തിലൊരിക്കൽ 4 3-6 മാസത്തിലൊരിക്കൽ 5 6 മാസത്തിനുമേൽ 6
13.	താങ്കൾ അവസാനമായി രക്തത്തിലെ പഞ്ചസാര യുടെ അളവ് പരിശോധിച്ചതെപ്പോൾ?	ഇന്ന് 1 ഇന്നലെ 2 ഒരു ആഴ്ച മുൻപ് 3 2 ആഴ്ച മുൻപ് 4 1 മാസം മുൻപ് 5 3-6 മാസം മുൻപ് 6 >6 മാസത്തിനുമേൽ 7
14.	അവസാനത്തെ പരിശോധനയിൽ, രക്തത്തിലെ പഞ്ച സാരയുടെ അളവ് എത്രയായിരുന്നു?	---------- mg/dl ഓർക്കുന്നില്ല 1 അറിയില്ല 2
15.	കഴിഞ്ഞ പ്രാവശ്യം രക്തപരിശോധനയ്ക്കുള്ള പണം ചിലവാക്കിയതാര്?	സ്വയം 1 കുടുംബാഗം 2

		സുഹൃത്തുക്കൾ 3 സൗജന്യമായിരുന്നു 4 മറെറന്തെങ്കിലും 5 (വ്യക്തമാക്കുക)
16.	കഴിഞ്ഞപ്രാവശ്യം പ്രമേഹ മരുന്നിനുള്ള പണം ചിലവാക്കിയതാര്?	സ്വയം 1 കുടുംബാഗം 2 സുഹൃത്തുക്കൾ 3 സൗജന്യ ചികിത്സ 4 മറെറന്തെങ്കിലും 5 (വ്യക്തമാക്കുക)
17.	പ്രമേഹ ചികിത്സയ്ക്കായി താങ്കൾ പോകാറുള്ള ആരോഗ്യപരിപാലന കേന്ദ്രം ഏതാണ്?	അടുത്തുള്ള പ്രാഥമിക ആരോഗ്യകേന്ദ്രം 1 വേറെ സർക്കാർ ആശുപത്രി 2 സ്വകാര്യ ക്ലിനിക് 3 സ്വകാര്യ ആശുപത്രി 4 വേറെ എന്തെങ്കിലും 5 (വ്യക്തമാക്കുക)
18.	സാധാരണയായി താങ്കൾ 2 മാസത്തിൽ കൂടുതലായി ആരോഗ്യ പരിപാലന കേന്ദ്രത്തിൽ പോകാറുണ്ടോ?	ഉണ്ട് 1 ഇല്ല 2
19.	എന്തുകൊണ്ടാണ് നിങ്ങൾ മേൽപറഞ്ഞ ആരോഗ്യകേന്ദ്രം തിരഞ്ഞെടുത്തത്?	--

20.	കഴിഞ്ഞ പ്രാവശ്യം പ്രമേഹരോഗ ചികിത്സയ്ക്ക് ആരോഗ്യപരിപാലന കേന്ദ്രത്തിൽ പോയപ്പോൾ ആരെങ്കിലും താങ്കൾക്ക് കൂട്ടുവന്നിരുന്നോ?	ഉണ്ട് 1 ഇല്ല 2

21.	പ്രമേഹരോഗചികിത്സയ്ക്ക് താങ്കൾക്ക് ഏതെങ്കിലും ഡോക്ടറിനെ പ്രത്യേകമായി കാണാൻ താൽപര്യപ്പെടുന്നുവോ?	ഉണ്ട് 1 ഇല്ല 2
22.	പ്രമേഹരോഗ ചികിത്സാ രീതിയെപ്പറ്റി ഡോക്ടറുമായി ചർച്ച ചെയ്യാറുണ്ടോ?	ഉണ്ട് 1 ഇല്ല 2
23.	ഇല്ലെങ്കിൽ മറ്റാരുമായിട്ടാണ് ഈ രോഗത്തെപറ്റിയുള്ള സംശയ നിവാരണങ്ങൾ നടത്തുന്നത്?	സുഹൃത്തുക്കൾ 1 പങ്കാളി 2 ബന്ധുക്കൾ 3 ആരോഗ്യരംഗത്ത് പ്രവർത്തിക്കുന്നവർ 4 ഇതേ അവസ്ഥയിലുള്ള മറ്റുള്ളവർ 5 മറ്റെന്തെങ്കിലും (വ്യക്തമാക്കുക) 6
24.	താങ്കൾ അവസാനമായി (ഏറ്റവും) ഡോക്ടറെ കണ്ടതെപ്പോൾ?	2 ആഴ്ചയ്ക്കുള്ളിൽ 1 2 ആഴ്ചയ്ക്കും 1 മാസനുള്ളിൽ 2 1-6 മാസത്തിനുള്ളിൽ 3 6 മാസത്തിനും 1 വർഷത്തിനും ഇടയിൽ 4 1 വർഷത്തിനുമേൽ 5 ഓർക്കുന്നില്ല 6
25.	താങ്കൾ എപ്പോഴെങ്കിലും പ്രമേഹരോഗ പരിപാടിയിൽ പങ്കെടുത്തിട്ടുണ്ടോ?	ഉണ്ട് 1 ഇല്ല 2

26.	ഉണ്ടെങ്കിൽ, ഏതാണ് ആ പഠന രീതി / പഠന പരിപാടി?	വീഡിയോ 1 ചർച്ച 2 ഡയറഗീഷ്യനിൽ നിന്നും ഉപദേശം 3 ലഘുലേഖ 4 ബുക്ക് 5 മറെറന്തെങ്കിലും 6 (വ്യക്തമാക്കുക)
27.	പങ്കെടുത്തിട്ടുണ്ടെങ്കിൽ, ആ പഠന പരിപാടിയിൽ നിന്നും നിങ്ങൾ എന്താണ് മനസ്സിലാക്കിയത്?	ആഹാര നിയന്ത്രണം, വ്യായാമം, ഭാരം കുറയ്ക്കുക 1 ലഭ്യമായ വിവിധ ചികിത്സാ രീതികളെപററി 2 രോഗത്തെപ്പററിയുള്ള കാരണങ്ങളും സൂചനകളും സങ്കീർണതകളും 3 രക്തപരിശോധന കാലാകാലങ്ങളിൽ നടത്തുന്നത് സംബന്ധിച്ച് 4 ഓർക്കുന്നില്ല 5 അറിയില്ല 6 മററുള്ളവ 7 (വ്യക്തമാക്കുക)
28.	നിങ്ങൾക്ക് ദീർഘകാലമായിട്ട് ഏതെങ്കിലും രോഗങ്ങൾ ഉണ്ടോ?	ഉണ്ട് 1 ഇല്ല 2

29.	ഉണ്ടെങ്കിൽ ആ രോഗങ്ങൾ ഏതാണ്?	ഹൃദ്രോഗം 1 രക്തസമ്മർദ്ദം 2 അധിക കൊഴുപ്പ് 3 മറെറന്തെങ്കിലും 4
30.	നിങ്ങൾക്ക് ആരോഗ്യ ഇൻഷുറൻസ് ഉണ്ടോ?	ഉണ്ട് 1 ഇല്ല 2
31.	നിങ്ങൾക്ക്, പ്രമേഹരോഗം നിങ്ങളുടെ ജീവിതത്തിൽ എന്തെല്ലാം വ്യത്യാസങ്ങൾ വരുത്തിയിട്ടുണ്ട്?	പൂർണമായി മധുരപലഹാരം ഒഴുവാക്കി 1 മധുരം കുറച്ചു 2 ക്ഷീണവും മന്ദതയും അകററാൻ എപ്പോഴും മിഠായി കൂടെ കരുതാറുണ്ട് 3 വീട്ടിലും എപ്പോഴും പാദ സംരക്ഷണത്തിന്റെ ഭാഗമായി ചെരുപ്പ് ധരിക്കുന്നത് ശീലമാക്കി 4 ഉത്സവങ്ങളിലും പാർട്ടികളിലും മററും പങ്കെടുക്കുന്നത് ഒഴിവാക്കി 5 ഭക്ഷണത്തിനായി ഒരു പ്രത്യേക സമയം ക്രമീകരിച്ചിട്ടില്ല 6 മറെറന്തെങ്കിലും 7 (വ്യക്തമാക്കുക)

പ്രമേഹത്തെപ്പറ്റിയുള്ള കാഴ്ചപ്പാട്

പ്രമേഹത്തെ നിങ്ങൾ എങ്ങനെ നോക്കിക്കാണുന്നെന്നും, കൈകാര്യം ചെയ്യുന്നു എന്നതിനെക്കുറിച്ചും ചില വാചകങ്ങൾ ഞാൻ വായിക്കാം. അതിനോട് നിങ്ങൾ എത്രമാത്രം യോജിക്കുന്നു എന്നത് "ശക്തമായി യോജിക്കുന്നു", "യോജിക്കുന്നു", "നിഷ്പക്ഷത", "വിയോജിക്കുന്നു", "ശക്തമായി വിയോജിക്കുന്നു" എന്നിവയിൽ ഏതെങ്കിലും ഒന്ന് രേഖപ്പെടുത്തുക.

Sl. No	പൊതുവിൽ ഞാൻ വിശ്വസിക്കുന്നു; എനിക്ക്	ശക്തമായി യോജിക്കുന്നു	യോജിക്കുന്നു	നിഷ്ക്ഷത	വിയോജിക്കുന്നു	ശക്തമായി വിയോജിക്കുന്നു
1.	എന്റെ പ്രമേഹത്തെ പരിരക്ഷിക്കുന്നതിൽ ഏതൊക്കെ ഘടകങ്ങളിലാണ് ഞാൻ തൃപ്തൻ/തൃപ്ത എന്ന് എനിക്കറിയാം.					
2.	എന്റെ പ്രമേഹത്തെ പരിരക്ഷിക്കുന്നതിൽ ഏതൊക്കെ ഘടകങ്ങളിലാണ് ഞാൻ അതൃപ്തൻ/ അതൃപ്ത എന്ന് എനിക്കറിയാം.					
3.	എന്റെ പ്രമേഹത്തെ പരിരക്ഷിക്കുന്നതിൽ ഏതൊക്കെ ഘടകങ്ങളിലാണ് ഞാൻ മാറ്റം വരുത്താൻ തയ്യാറുള്ളത് എന്ന് എനിക്കറിയാം.					
4.	എന്റെ പ്രമേഹത്തെ പരിരക്ഷിക്കുന്നതിൽ ഏതൊക്കെ ഘടകങ്ങളിലാണ് ഞാൻ മാറ്റം വരുത്താൻ തയ്യാറല്ലാത്തത് എന്ന് എനിക്കറിയാം.					
5.	പ്രമേഹ നിയന്ത്രണത്തിനുവേണ്ടിയുള്ള യാഥാർത്ഥ്യ ലക്ഷ്യങ്ങൾ തിരഞ്ഞെടുക്കാൻ എനിക്ക് കഴിയും.					
6.	പ്രമേഹ നിയന്ത്രണ ലക്ഷ്യങ്ങളിൽ എനിക്ക് ഏറ്റവും പ്രധാനപ്പെട്ടത് ഏതാണെന്ന് എനിക്കറിയാം.					
7.	എന്നിലുള്ള എന്തെല്ലാം കാര്യങ്ങളാണ് എന്നെ പ്രമേഹ നിയന്ത്രണ ലക്ഷ്യങ്ങളിൽ എത്തിച്ചേരുന്നതിന്, സഹായിക്കുന്നത് അല്ലെങ്കിൽ, നിയന്ത്രിക്കുന്നത് എന്നത് എനിക്കറിയാം.					

Sl. No	പൊതുവിൽ ഞാൻ വിശ്വസിക്കുന്നു; എനിക്ക്	ശക്തമായി യോജിക്കുന്നു	യോജിക്കുന്നു	നിഷ്പക്ഷത	വിയോജിക്കുന്നു	ശക്തമായി വിയോജിക്കുന്നു
8.	എന്നെ ഈ ലക്ഷ്യങ്ങളിൽ എത്തിചേരുവാൻ സഹായിക്കുന്ന നല്ല ആശയങ്ങളെ കണ്ടുപിടിക്കാൻ എനിക്ക് സാധിക്കും.					
9.	ഈ ലക്ഷ്യങ്ങളെ ഒരു കർമ്മപദ്ധതിയാക്കാൻ എനിക്ക് സാധിക്കും.					
10.	ഞാൻ മനസ്സുവച്ചാൽ എനിക്ക് പ്രമേഹ നിയന്ത്രണ ലക്ഷ്യങ്ങളിൽ എത്തിചേരുവാൻ സാധിക്കും.					
11.	എന്തൊക്കെ തടസ്സങ്ങളാണ് എന്റെ പ്രമേഹ നിയന്ത്രണ ലക്ഷ്യങ്ങളിൽ എത്തുന്നതിന് ഏറെ ബുദ്ധിമുട്ടുണ്ടാക്കുന്നത് എന്ന് എനിക്കറിയാം.					
12.	പ്രമേഹ നിയന്ത്രണ ലക്ഷ്യങ്ങൾ നേടുന്നതിനുള്ള തടസ്സങ്ങൾ അതിജീവിക്കുവാനുള്ള പല മാർഗ്ഗങ്ങൾ എന്തൊക്കെയാണെന്ന് എനിക്കറിയാം.					
13.	പ്രമേഹ നിയന്ത്രണ ലക്ഷ്യങ്ങളിൽ എത്താനുള്ള തടസ്സങ്ങൾ മറികടക്കുവാനുള്ള മാർഗ്ഗങ്ങൾ എനിക്ക് പ്രാവർത്തികമാക്കുവാൻ അറിയാം.					
14.	പ്രമേഹ നിയന്ത്രണ ലക്ഷ്യങ്ങളിൽ എത്താനുള്ള തടസ്സങ്ങളെ മറികടക്കാൻ എനിക്ക് ഉതകുന്ന ശരിയായ മാർഗ്ഗങ്ങൾ ഏതൊക്കെയാണെന്ന് എനിക്ക് അറിയാം.					
15.	പ്രമേഹമെന്ന രോഗം ഉള്ളതുകൊണ്ട് ഉണ്ടാകാവുന്ന വികാരത്തെപ്പററി പറയുവാൻ എനിക്ക് അറിയാം					
16.	എന്റെ പ്രമേഹപരിരക്ഷണത്തെപ്പറ്റിയുള്ള വികാരം എന്താണെന്ന് എനിക്ക് നന്നായി പറയുവാൻ കഴിയും.					

Sl. No	പൊതുവിൽ ഞാൻ വിശ്വസിക്കുന്നു; എനിക്ക്	ശക്തമായി യോജിക്കുന്നു	യോജിക്കുന്നു	നിഷ്പക്ഷത	വിയോജിക്കുന്നു	ശക്തമായി വിയോജിക്കുന്നു
17.	പ്രമേഹം കാരണം എന്റെ ജീവിതത്തിൽ ഉണ്ടാകാവുന്ന സമ്മർദ്ദത്തെപ്പറ്റി എനിക്ക് അറിയാം.					
18.	പ്രമേഹം മൂലം ഉണ്ടാകുന്ന സമ്മർദ്ദങ്ങൾ അതിജീവിക്കുവാനുള്ള ഗുണപരമായ കാര്യങ്ങൾ എനിക്ക് അറിയാം.					
19.	പ്രമേഹം മൂലം ഉണ്ടാകുന്ന സമ്മർദ്ദങ്ങൾ അതിജീവിക്കുവാനുള്ള ഗുണപരമല്ലാത്ത കാര്യങ്ങൾ എനിക്ക് അറിയാം.					
20.	പ്രമേഹം മൂലം ഉണ്ടാകുന്ന സമ്മർദ്ദങ്ങൾ അതിജീവിക്കുവാൻ എനിക്കറിയാം.					
21.	എന്റെ പ്രമേഹത്തിനുവേണ്ടി എവിടെ നിന്ന് സഹായം ലഭിക്കുമെന്ന് എനിക്ക് നന്നായി അറിയാം.					
22.	എനിക്ക് ആവശ്യമുള്ളപ്പോൾ പ്രമേഹത്തിനുള്ള സഹായവും പരിചരണവും അഭ്യർത്ഥിക്കുവാൻ കഴിയും.					
23.	എന്റെ പ്രമേഹം കൈകാര്യം ചെയ്യുന്നതിന് എനിക്ക് എന്നെത്തന്നെ സഹായിക്കാൻ കഴിയും.					
24.	എന്റെ പ്രമേഹപരിരക്ഷണത്തിന് എന്താണെന്നെ ഉത്സാഹിപ്പിക്കുന്നത് എന്ന് എനിക്കറിയാം.					
25.	എന്റെ പ്രമേഹത്തെ പരിരക്ഷിക്കുന്നതിന് എനിക്ക് എന്നെ തന്നെ പ്രചോദിപ്പിക്കുവാൻ കഴിയും.					

Sl. No	പൊതുവിൽ ഞാൻ വിശ്വസിക്കുന്നു; എനിക്ക്	ശക്തമായി യോജിക്കുന്നു	യോജിക്കുന്നു	നിഷ്പക്ഷത	വിയോജിക്കുന്നു	ശക്തമായി വിയോജിക്കുന്നു
26.	എനിക്ക് പ്രമേഹത്തെപ്പറ്റി ആവശ്യത്തിന് അറിവുള്ളതു കൊണ്ട് ശരിയായ സ്വയം പരിചരണ തിരഞ്ഞെടുക്കലുകൾ നടത്തുവാൻ എനിക്ക് അറിയാം.					
27.	ഒരു വ്യക്തി എന്ന നിലയിൽ എനിക്ക് എന്നെത്തന്നെ അറിയാവുന്നതിനാൽ, പ്രമേഹപരിരക്ഷണത്തിന് എനിക്ക് ആവശ്യമായ സ്വയം പരിചരണ തിരഞ്ഞെടുക്കലുകൾ നടത്തുവാൻ എനിക്ക് അറിയാം.					
28.	എന്റെ പ്രമേഹത്തെ പരിരക്ഷിക്കുന്നതിൽ വ്യത്യസ്തത വരുത്തുന്നതുകൊണ്ട് എന്തെങ്കിലും ഗുണം എനിക്ക് ഉണ്ടോയെന്ന് തിരിച്ചറിയുവാൻ എനിക്ക് സാധിക്കും.					

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान

तिरुवनन्तपुरम - 695 011, केरल, इंडिया

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY

THIRUVANANTHAPURAM - 695 011, INDIA

(An Institute of National importance under Govt. of India)

Institutional Ethics Committee

(IEC Regn No. ECR/189/Inst/KL/2013)

SCT/IEC/614/JUNE -2014 11-06-2014

Ms. Anna Ninan
MPH Student
AMCHSS, SCTIMST.

Dear Ms. Anna Ninan,

The Institutional Ethics Committee reviewed and discussed your application to conduct the study entitled "ASSESSING THE LEVEL OF EMPOWERMENT TO MANAGE CARE AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS IN TRIVANDRUM DISTRICT, KERALA"(IEC/614) on 7th June, 2014.

The following documents were reviewed:

1) *Cover page.*
2) *Project proposal.*
3) *Principal investigators short curriculum vitae.*
4) *Informed consent – English.*
5) *Informed consent – Malayalam.*
6) *Interview schedule – English.*
7) *Interview schedule – Malayalam.*

तार : चित्रमेट Grams : Chitramet | फोन Phone : 2443152 | फाक्स Fax : (91)471-2446433 2550728 | ई-मेइल E-mail : sct. @sctimst.ker.nic.in

The following members of the Ethics Committee were present at the meeting held on 7th June, 2014 at G. Parthasarathi Board Room, AMCHSS, SCTIMST.

SL. No.	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation with Institution(s)
1.	Justice Gopinathan. P.S	BSc. LLB	Male	Legal Expert (Chairperson)	*No*
2.	Dr. Meenu Hariharan	DM	Female	Clinician (Gastro Enterologist)	*No*
3.	Dr. M.D. Gupte	MD, DPH	Male	Public Health	No
4.	Dr. R.V.G. Menon	PhD	Male	Lay Person	No
5.	Dr. Mala Ramanathan	MSc, PhD, MA	Female	Ethicist/Social Scientist (Member Secretary)	Yes

IEC Decision

The IEC approved the conduct of the study in the present form.

Remarks:

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team /guide who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,

Mala Ramanathan
Member Secretary, IEC