A STUDY TO DETERMINE THE EFFECT OF STRUCTURED TEACHING PROGRAMME IN IMPROVING KNOWLEDGE ON FOOT CARE AMONG PATIENTS WITH DIABETES MELLITUS IN SREE MOOKAMBIKA MEDICAL COLLEGE HOSPITAL, KULASEKHARAM, AT KANYAKUMARI DISTRICT

A DISSERTATION SUBMITTED TO THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

APRIL – 2012

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Approved by the dissertation Committee on : ……..

Research Guide :

Prof Mrs. Santhi Letha M.Sc(N)

Sree Mookambika College of Nursing

Kulasekharam

Subject guide :

Mrs.Ajitha Rethnam M.Sc(N), MBA

Professor

Sree Mookambika College of Nursing,

Kulasekharam

Medical Guide:

Dr. Kaniraj Peter M.B.B.S, M.D

Head of Department of Medicine

Sree Mookambika Medical College Hospital,

Kulasekharam

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

CERTIFICATE

This is to certify that this is a bonafide work of _____ II year M.Sc Nursing, Sree Mookambika College of Nursing, Kulasekharam in partial fulfillment of the requirement for the degree of Master of Science in Nursing.

Place:Kulasekharam

Date: Principal

Sree Mookambika College of Nursing

ACKNOWLEDGEMENT

I investigator of this study owe a deep sense of gratitude to all those who contributed to the successful completion of this Endeavour.

First of all, I praise and thank Lord Almighty with reverence and sincerity for his rich heavenly blessings and abundant grace. He has strength me in each and every step through out this endeavor.

I express my sincere thanks and gratitude to the Chairman **Dr. Velayudhan Nair M.S** and Director **Dr. Rema V.Nair, M.D, D.G.O,** Sree Mookambika Institute of Medical Science, Kulasekharam for providing necessary facilities for the successful option of the study and for their valuable guidance.

I express my deep sense of gratitude to **Prof.Mrs.Santhi Letha M.Sc (N),** Principal Sree Mookambika College of Nursing for her excellent guidance expert advice and help to carryout the study in time.

I acknowledge my heart felt gratitude to **Prof. Mrs. Prabha M.Sc(N)** Vice Principal Sree Mookambika College of Nursing for her valuable guidance provided to accomplish this study.

I am highly indebted to **Mrs. K.Ajitha Rethnam M.Sc(N) MBA Head of Department of Medical surgical Nursing,** who has laid a strong foundation in moulding this research study and devoted her precious hours by giving valuable suggestion and constructive guidance and encouragement throughout the study.

I acknowledge with immense sincerity the help rendered by **Mrs.Adlin Sujitha M.Sc(N)** .Sree Mookambika College of Nursing, Kulasekharam for her constant support, guidance, valuable suggestions constructive criticism and encouragement through out the study.

I am further greatful to **Mrs. Adlin Shynija,M.Sc (N), Asst Professor** and all the faculty members of Sree Mookambika College of Nursing for their motivation and immense support given through the disseratation work.

I express my sincere thanks to **Dr. Kaniraj,s M.B.B.S; M.D.,** Head of Department of Medicine , Sree Mookambika College Hospital for valuable suggestions and guidance in the successful completion of the study.

I am greatful to **Prof.Kumar, B.Sc, M.A, M.P.S,** Asst.Prof., Department of Biostatistics, Sree Mookambika Medical College for his valuable guidance in statistical analysis.

My heartful thanks to all faculty of Sree Mookambika College of Nursing, Kulasekharam for their support and guidance during my study.

I extend my gratitude to all staff of library, Sree Mookambika College of Nursing Kulasekharam for all help given in reference work of this study.

I acknowledge my heart felt gratitude to **GOOD MORNING XEROX**, Kulasekharam for his assistance in computer works during this research work.

For all participants in the study for spending their valuable time and for their sincere co-operation without which the study would have been impossible.

All my beloved classmates for their direct and indirect support concern and help to make this attempt an interesting one.

It is my great pleasure to express my deep sense of special gratitude to my husband Mr. **Sibi C. Das** and **my Parents** for their continuous help throughout the study for encouraging me to overcome the tides of heavy schedules and problems in the path of progress in this study.

Investigator

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ABSTRACT

Introduction

Diabetic foot is one of the major complications in diabetes patients, affecting around 10-15% of the patients at some point of time in their lives and accounting for nearly 50% hospital admissions among diabetics. Diabetic foot complications cause huge economical burden to the society. The only way to cut short this problem is patient education, regular foot care, early detection of contributing factors, tight blood sugar control and selection of proper foot wear. This study was undertaken to determine the effectiveness of structured teaching programme in improving knowledge on foot care among patients with diabetes mellitus at Sree Mookambika Medical College Hospital Kulasekharam. An extensive review of literature was done which helped the investigator to identify and analyze the existing information regarding the problem under study and to practice it effectively. The conceptual framework adopted for the study was J. W. Kennys open system model.

Objective of the study

To determine the effectiveness of structured teaching programme in improving knowledge on foot care among patients with diabetes mellitus in experimental group and control group.

Research Methodology

The study was conducted in Sree Mookambika Medical College Hospital Kulasekharam, Kanyakumary District. Two group pretest post test design was adopted and the purposive sampling technique was followed to obtain 60 samples. Among them 30 were allotted to experimental group and 30 in control group. Data were collected by using Knowledge Assessing Questionnaire. Pretest was administered on the first day for the both groups followed by structured teaching programme on foot care about 30 minutes and booklet on foot care was provided to the samples in experimental group. Structured Teaching Programme was not given to control group. Post test was done on the seventh day for both groups using the same pretest Knowledge Assessing Questionnaire .

Study Findings

The data collected were analyzed by using descriptive and inferential statistics. The post test mean score of the experimental group on seventh day (22.7) was much higher than that of the control group on day seven (14.63) ($t=17.43$, $p<0.05$). Thus the structured teaching programme on foot care was found to be effective.

Conclusion

The structured teaching programme on foot care found to be effective in improving knowledge level of patients regarding foot care. Similar studies can be conducted in large sample so that it could be generalized.

CHAPTER I

INTRODUCTION

"Foot is superior to wing, because even when we have wings to fly in the sky, we still need feet so as not to crawl on the ground"!

The human foot is a mechanical marvel. It consist of 26 bones, 29 joints, 42 muscles and a multitude of tendons and ligaments. In a life time this phenomenal machine with its multiple movable parts walks seventy five thousand to one hundred thousand miles – three to four times around the world and it is exposed to significant pressure with each step. In diabetic population foot problem is a very common problem. In South East Asian Countries like Vietnam, Laos and Cambodia, where land mines are major cause of lower limb amputation, diabetes has been considered as a more common cause of foot amputation than the land mines. Every 30 minutes a person loses a lower limb related to land mines in those areas, where as every thirty seconds a person loses a limb somewhere in the world due to diabetic foot problems. In India about forty thousand legs are amputated every year because of diabetes related foot complications.

(Basab ghosh 2011)

The prevalence of diabetes for all age groups world wide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. The prevalence of diabetes is higher in men than in women. The

incidence of diabetes mellitus among the urban population in developing countries is projected to double between 2000 and 2030.

(WHO 2000)

The incidence of new episodes of foot ulceration in type 2 diabetic patients in a primary care setting at Netherland was 2.1% per year and amputations were 0.6% per year.

(William H. Em 2011)

India has a high prevalence of diabetes mellitus and the numbers are increasing at an alarming rate. In India alone, diabetes is expected to increase from 40.6 million in 2006 to 79.4 million by 2030.

(SR Mehta 2007)

Diabetes may pose multiple risk like cardio vascular diseases, retinal damage, chronic kidney damage and damage to the peripheral nerves in the body, causing loss of sensation and a high risk for developing foot ulcers. Nearly 3% of the total world population currently suffers from diabetes. Diabetic foot is one of the major complication in diabetic patients, affecting around 10 - 15% of the patients at some point of time in their lives and accounting for nearly 50% of hospital admissions among diabetics. Micro and macro vascular complications, coupled with neuropathy, is primarily responsible for the breakdown of the skin and delayed wound healing, leading to the development of ulcer. A diabetic patient with neuropathy may not properly sense minor foot injuries and foot strain and constant rubbing against the injury may cause a sore. The bacterial infection of the skin and connective

tissue may develop into gangrene and septicemia. Very often, the main treatment for advanced stage of foot ulcer is foot or leg amputation.

(Dr. Devesh Oberoy 2010)

In India there is a poor awareness regarding the need for foot care among diabetic patients. Ina recent study, it was shown that strategies such as intensive management and foot care education were helpful in preventing newer problems and surgery in diabetic foot disease and there were fewer recurrence of ulcers and that the healing process was faster in subjects adhering to the foot care advice than in those who did not follow the advice. Rural subjects have lower educational status and therefore more intensive methods for awareness are required. This calls for more aggressive methods of patient education and motivation to implement preventive strategies in rural patients.

(Sivagami Madhavan2006)

Vijay Viswanathan (2005) conducted a study at Chennai to assess the ulcer related and patient related outcomes in Type 2 diabetic patients with foot ulceration in India. A total of 1143(M:F,756:387) consecutive type 2 diabetic neuropathic subjects with foot ulceration seen during a period of 48 months were selected from a well established foot clinic of a tertiary care centre in India. Ulcer related outcomes were assessed. Details about smoking habits and presents of micro and macro vascular complications of diabetes were recorded. Education on foot examination had been carried out for all the patients and they had been provided with customized orthoses to reduce foot pressures. The result of the study showed that approximately 60% ulcers

healed and remained ulcer free over a mean of 34.2 months period of observation. In contrast, 23.4% of ulcers never healed and recurrence was seen in 15.1% of the ulcers. 15 patients required an amputation and 5 of the patients died. The median number of days for the ulcer heal was 241 days and a recurrent or a new ulcer developed after a median of 205 days. The median time for the patients to be free from ulcers was 6 months mean HbA1C% and prevalence of smoking were higher in recurrent ulcer and never healed patients, while usage of therapeutic foot wear was lower among them when compared with ulcer free patients. They concluded that it is possible to reduce the burden of foot problems by educating patients on foot care and by providing appropriate foot wear.

Foot complications are one of the most common diabetes related causes of hospitalization. They can go untreated for a long time because people with diabetes often have nerve damage that causes them to loss of feeling in their feet, making them unable to feel the wound. Many people are unaware of their risk for foot problems and don't know how to care proper care of their feet.

(www.heal2gether.org.2011)

Significance and need of study

Although many serious chronic complications affect people with diabetes, foot complications are the greatest burden. As many as 40-60% of lower extremely amputations are related to peripheral neuropathy. In United States, more than 50,000 diabetes related lower extremely amputations are performed yearly. Even short of amputations, diabetic peripheral neuropathy

limits mobility impairers sleep, hinders the enjoyment of leisure time activities, and affect patients overall quality of life. Amputations are clearly associated with loss of independence and increased mortality.

(Jennifer B. Marks)

Diabetic foot ulcers cause 20% of all diabetic hospital admissions, carry a 15 to 30 fold increased risk of lower extremity amputation, cost more than $4500 to treat per episode, and proceed 85% of all lower extremity amputations in people with diabetes. Clearly, diabetic foot problems result in high individual costs and a large national economical burden, yet there is a paucity of medical literature focusing on this problem

(Chales A Adams,1998)

William Dabdoub (2010) conducted a study to evaluate the frequency of diabetes associated problems among patients attending outpatient clinics at the Lousiana, Rehabilitation Institute in New Orleans. The result of the study shows that a significant increasing trend in micro vascular complications with duration of diabetes was found. Among all complications, peripheral neuropathy is the most common and first one to be noted.

Management of diabetes and its complication in a rural setting poses a formidable challenge. It has been reported that diabetic patients who wear foot wear both inside and outside their homes developed lesser foot problems than those patients who wore foot wear only when they went outside their homes. In individual patients with diabetic neuropathy who live in rural areas are more prone to foot ulcers than those who live in urban areas for various

reason. The reason for high prevalence of foot infection could be attributed to greater prevalence of barefoot walking, lesser use of customized foot wear and increased prevalence of smoking.

(Vijay Viswanathan 2005)

The general public is often unaware of the long term damage to the body, particularly the failure of various organs and tissues that are associated with elevated levels of blood glucose. However people with diabetes are two to four times more likely to develop cardiovascular disease than people without diabetes, and 25 times more likely to lose a leg than people without the condition . Somewhere in the world a leg is lost due to diabetes every 30 seconds.

(Hospital management, 2005)

Lee C Rogers (2010) conducted a study at Los Angeles to assess the effectiveness of organized programmes to prevent lower extremity amputations. The implemented a six-step approach to the diabetic limb at risk. They calculated the frequency and level of lower-extremity amputations for 12 months before and 12 months after the implementation of the amputation prevention programme and also calculated the high low amputation ratio is a quality measure for the success of amputation prevention measures and is calculated as the ratio of the number of high amputations over the number of low amputations. The result of the study shows that the frequency of total amputations increased from 24 in the year 1 to 46 in year 2. However ,the number of limb losses decreased from 7 to 2 (72%). The high low amputation rate decreased eight fold in I year, which serves as a marker for limb salvage

success. This reveals that an improvement in care organization and multidisciplinary centered protocols can substantially reduce limb losses.

For most people who have lost a leg life will never return to normal. Amputation may involve lifelong dependence upon the help of others, inability to work and much misery. Aggressive management of the diabetic foot can prevent amputations in most cases. Even when amputations takes place, the remaining leg and the person's life can be saved by good follow-up care from a multidisciplinary foot team.

(International diabetes federation, 2005)

Vijay Viswanathan (2005) conducted a study at Chennai on the intensive treatment and education strategies for type 2 diabetic patients with high risk diabetic foot disease helps in preventing foot amputation. The result of the study showed that strategies such as intensive management and foot care education were helpful on preventing newer problems and surgery in diabetic foot ulcers.

Elliot P. Joslin (1934) recognized that lower limb amputation was not an inevitable complication of diabetes but the result of modifiable risk factors. He believed that an approach of a team to diabetic care, including patient education and podiatric care could prevent or minimize limb loss.

All individuals with diabetes should receive an annual foot examination to identify high risk foot conditions. This examination should include assessment of protective sensation, foot structure and biomechanics ,vascular status and skin integrity. People with one or more high risk foot conditions should be evaluated more frequently for the development of

additional risk factors .People with neuropathy should have a visual inspection of their feet every visit with a health care professional.

(American Diabetes Association 2005)

Kriegsman (2010) conducted a study on the effect of patient education on the prevention of foot ulcers to patient with diabetes mellitus at Cochrane. The result of the study shows that foot care knowledge and self reported patient behavior seen to be positively influenced by education in short term.

Rabi I. Eroke (2010) conducted study on the awareness and attitude to foot care among adult diabetic patients at Nigeria. The result of the study shows that awareness of foot care measures is very poor among known diabetic patients and this is largely due to lack of education of patient by their health care procedures.

This significant lack of education on foot care is unacceptable, especially considering the fact that diabetic foot syndrome not only poses serious medical problems but also a socio economic impact by virtue of the number of hospital visits and admissions. Hence the investigator selected the study to control the prevalence of foot ulcers and to make the people aware and improve the knowledge as a method of placing peoples health in their own hand.

Statement of the problem

A study to determine the effectiveness of structured teaching programme in improving knowledge on foot care among patients with diabetes mellitus in Sree Mookabika Medical College Hospital, Kulaseharam, at Kanyakumari District.

Objectives of the study

- To assess the level of knowledge on foot care among patients with diabetes mellitus in experimental and control group.
- To determine the effectiveness of structured teaching programme in improving knowledge on foot care among patients with diabetes mellitus in experimental group and control group.
- To find out the association between the level of knowledge with the selected demographic variables such as age, sex, family history of Diabetes Mellitus with the prevention of foot ulcer among patients with diabetes mellitus.

Hypotheses

- **H_1** There is a significant improvement in the level of knowledge among patients in experimental group than in control group.
- **H_2** There is a significant association between the level of knowledge with the selected demographic variables like age, sex and family history of Diabetes Mellitus,education.

Operational definition

Effect

It refers to the positive outcome expected by the researcher after the administration of structured teaching programme among patients in experimental group as measured by Knowledge Assessing Questionnaire.

Structured teaching programme

It is systematically and logically arranged teaching programme prepared by the researcher after indepth literature review on diabetes foot care which is administered to the clients allocated to experimental group for duration of 30 minutes with the help of flashcard and after the teaching session the clients will be provided with a booklet on the same.

Knowledge

It refers to responses given by the client based on their awareness of foot care as measured by knowledge assessment questionnaire.

Foot care

Foot care involves all aspects of preventative and corrective care foot and ankle.

Diabetes mellitus

Diabetes mellitus is a multisystem disease related to abnormal insulin production, impaired, insulin utilization or both.

Assumption

- Diabetic patients may not possess adequate knowledge regarding foot care.
- Imparting knowledge to the diabetic patients may change the attitude in foot care practice.
- Teaching programme may have a positive influence in improving knowledge

Delimitation of the study

- The study is limited to 60 samples
- The period of study is one month
- Study is limited to only one hospital

Ethical consideration

The study was conducted after the approval of the dissertation committee of Sree Mookambika college of Nursing. The subject were informed about the nature of the study. Oral consent was obtained from each participants of the study. Confidentiality and privacy was maintained.

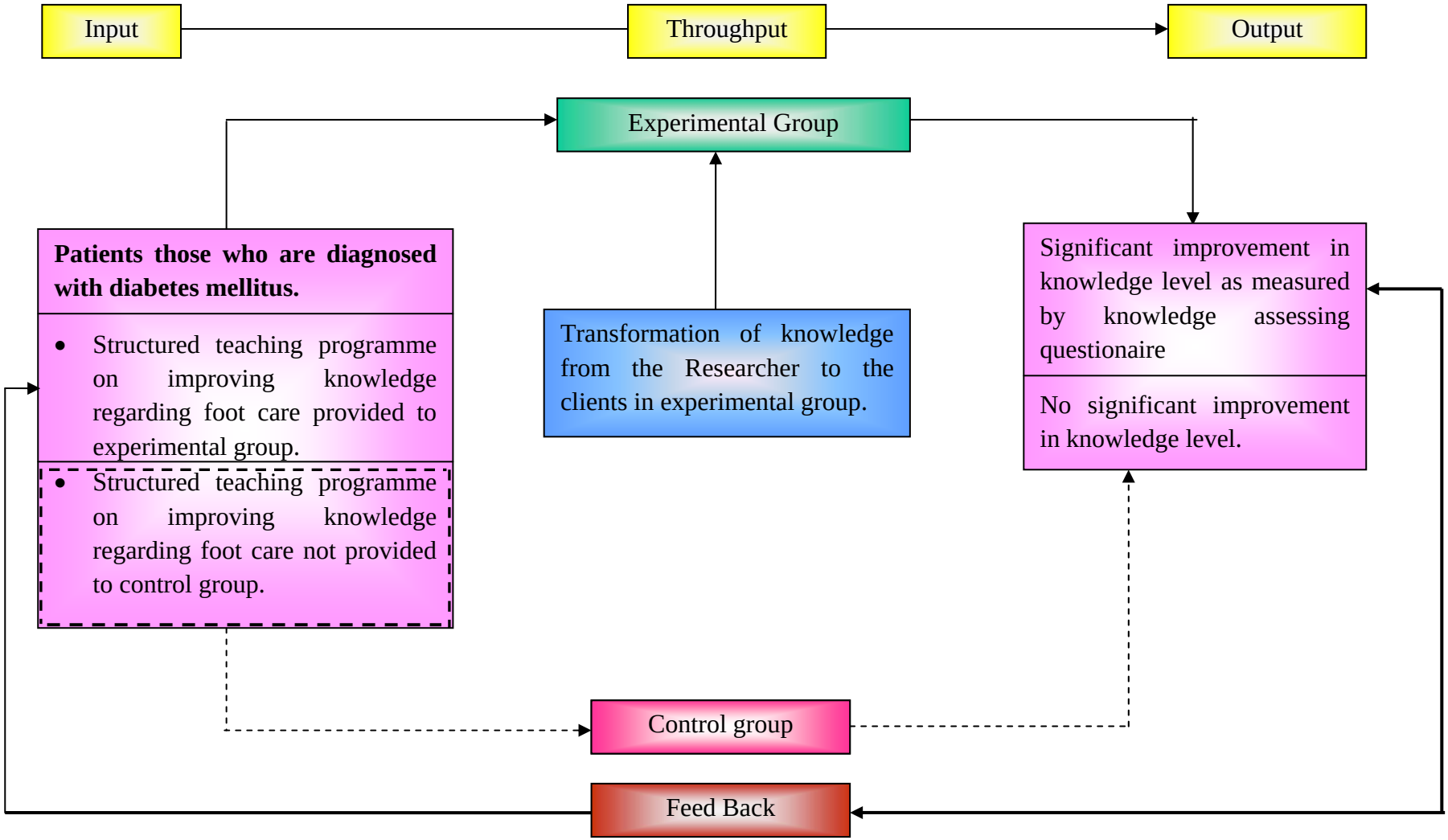
Conceptual frame work

The Conceptual frame work for this study was derived from JW Kenny's open system model, Kenny defined a system as a whole with interrelated parts in which parts have a function and system as a whole has its own function. All living systems are open system in which there is a continuous exchange of matter, energy and information provides input for the system. The system transforms the input into the process known as the throughput. The energy of information is given off in to the environment as output. When the output is returned into the system as input, the process is known as feedback.

The present study is aimed to determine the effect of structured teaching programme (STP) on improving knowledge regarding foot care among patients with diabetes mellitus. In this the input is the actual delivery

of STP on improving knowledge regarding foot care and throughput is the transformation process where the patient's change in perception and positive acceptance is taking place and output is assessed through posttest to find out the significant improvement

J.W KENNY'S OPEN SYSTEM MODEL



CHAPTER II

REVIEW OF LITERATURE

Review of literature is a key step in research Process. Review of literature refers to an extensive exhaustive and systemic examination of Publications relevant to the research project.

Research literature was reviewed under the following headings.

1. Studies related to incidence and Prevalance of diabetes mellitus.
2. Studies related to incidence and Prevalence of foot ulcer.
3. Studies related to knowledge on prevention of the foot ulcer.
4. Studies related to educational programme for the prevention of foot ulcer.

Studies related to incidence and Prevalence of diabetes mellitus

WHO (2000) conducted a study to estimate the prevalence of diabetes and the number of people of all ages with diabetes for years 2000 and 2030. Data on diabetes prevalence by age and sex from a limited number of countries were extrapolated to all 191 world Health Organization number states and applied to United Nations population estimated for 2000 and 2030. The result of the study showed that the prevalence of diabetes for all age groups world wide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total numbers of people with diabetes is projected to rise from 171 million in 2000 to 366 million in

2030. The Prevalence of diabetes is higher in men than women but there are more women with diabetes than men. The urban population in developing countries is projected to double between 2000 and 2030. The most important demographic change to diabetes prevalence across the world appears to be the increase in the proportion of people >65 years of age.

WHO (1993) investigated on global estimates of diabetes mellitus and impaired glucose tolerance in adults. Population based investigation was based on current WHO criteria from 150,000 persons from 75 communities in 32 countries. The result revealed that with in the chosen age range, diabetes was absent or rare (3%) in some traditional communities in developing countries. In European populations, age standardized prevalence varied from 3 to 10% Arab migrant Asian, Indian, Chinese and Hispanic American Populations were higher risk with prevalence of 14-20%. The highest prevalence in Newans (41%) and Pima / Papago Indians (50%). Age-standardized prevalence of impaired glucose tolerance (IGT) was low (<3%) in some Chinese, traditional American Indian and Pacific island populations. Moderate or high prevalence of IGT observed to many populations world wide. The highest estimates for prevalence IGT were seen in female Muslim Asian Indians in Tanzania (32%) and in Urban male Micronesians in Kiribati (28%). In most communities, at least 20% of diabetes cases were unknown before the survey, and in many communities, >50% were previously undiagnosed. In both Chinese and Indian migrant populations, relative prevalence was high with indigenous communities.

Javid Ahmed, Muneer, Rafiq etal (2011) conducted a cross sectional study to assess the Prevalence of diabetes mellitus and its associated risk factors in age group of 20 years and above in Kashmir for 1040 subjects (500 males and 540 females) and were screened for diabetes mellitus. Body mass index, waist to hip ratio, Personal history and family history were recorded at base line through pretested questionnaire. After an overnight fast, blood samples were drawn for determination of fasting plasma glucose. In the case fasting plasma glucose ≥126 mg/dl, a second determination was performed one week later. The result of the study showed that the prevalance of diabetes mellitus was 6.05% with known diabetes mellitus being 4.03 % of the study population and undiagnosed diabetes mellitus being 2.02% subjects. Significant difference was detected between males and females (3.6% vs 8.3%, $p<0.05$). There was also significant increase in the prevalence of diabetes mellitus with increasing age (age 20-40 years, 3.02% vs > 60 years 16.66% $P<0.05$). Furthermore prevalence of obesity (body mass index > 25 kg/m2) was 36.82% more so central obesity and family history were significantly associated with the presence of diabetes mellitus $P<0.001$ and the result also revealed that the Prevalence of diabetes mellitus is showing a rising trend in Kashmir Valley.

Furquan Siddiqui (2010) conducted as study to evaluate the frequency of diabetes associated problems among patients attending outpatient clinics in Louisiana in New Orleans for 182 patients with an average age of 56.3. A questionnaire was given to patients including demographics, medical and surgical history of diabetes, and the type of treatment the patient received.

Additional complication related information was obtained by medical examination. The result of the study showed that survey respondents were African American or Caucasian (24%). The majority of patients were classified as having type 2 diabetes than half of the study sample (52%) reported had the disease for more than 10 years. Forty-eight persons reported smoking on a regular basis the average duration was 22 years. One sixth of patient consuming alcohol on an infrequent basis. They also identified that peripheral neuropathy was the most complication requiring lower extremity amputation.

Studies related to Incidence and Prevalence of Foot Ulcer.

P.K. Sahana, N. Sengupta, S. Chawdhury etal (2011) conducted a cross sectional study to assess the Prevalence of Sensory neuropathy and Peripheral arterial disease in subjects with diabetes for 410 consecutive subjects attending the OPD with diabetes were evaluated. Vibration perception threshold (VPT) was measured by biothesiometer pressure perception was assessed by 10gm monofilament (MFT) and Ankle brachial index (ABT) was measured by a hand hold Doppler. The result of the study revealed that 285 (69.5%) were males and 125 (30.5%) subjects were females. Insensitivity to monofilament testing at one or more sites was found in 265 subjects (64.6%) and 239 subjects (58.3%) had VPT 25V. Severe sensory neuropathy (MFT=<3) was detected in 127 (30.9%) patients. Peripheral arterial disease (PAD) (ABI <0.9) was detected in 141 patients (34.4%). However, critical PAD (ABI <06) was detected in 4 patients (0.9 %). Increasing age and longer duration of diabetes, poor glyemic control and smoking were strongly associated with both neuropathy and PAD.

Fatma etal (2007) conducted a cross sectional study to determine the prevalence and risk factors for foot complications among diabetic patients in United Arab Emirates for 513 patients using an interviewer administered questionnaire and underwent medical assessment of presence of peripheral neuropathy (PN) and peripheral Vascular disease (PVD). The result of the study showed that Forty nine percent of the study populations were diagnosed to have DM without presenting with symptoms of diabetes and 35% had hypertension. The majority (86%) had type 2 DM of the total sample 39% and 12% had PVD. There were no cases of amputation and only one case had previous history of lower extremely ulceration . Significant risk factors or PN and PVD were male gender, poor level of education, UAE nationality, increased duration of diabetes, type 2 DM, presence of hypertension and micro albuminuria.

Ramsey Newton, Blough etal (1999) conducted a retrospective cohort study to determine the incidence of foot ulcers in a large cohort of patients with diabetes, the risk of developing serious complications after diagnosis, and the attributable cost of care compared with that in patients without foot ulcers. Patient with diabetes were identified by algorithm using administrative, laboratory, and pharmacy records. The data were used to calculate incidence of foot ulcers, risk of ostcomyelits, amputation and death after the diagnosis of foot ulcer, and attributable cost in foot ulcer patients compared without foot ulcer, for 8,95 patients. The result of the study showed that among 8,905 patients identified with type 1 or type 2 diabetes, 514 developed foot ulcer over 3 years of observation (cumulative incidence 5.8%). On or after the time of diagnosis, 77

(15%) patients developed Ostieomyelitis and 80 (15.6%) required amputation. Survival at 3 years was 72% for the foot ulcer patients versus 87% for a group of age and sex matched diabetic patients without foot ulcers. (P<0.01).

Boyko EJ, Ahroni (1999) conducted a prospective study on risk factors for diabetic foot ulcer that considers the independent effect of multiple potential etiological agents. 749 diabetic veterans with 1,483 lower limbs were selected as study samples who had not developed foot ulcer. Baseline assessment included history and lower-limb physical examination, test for sensory and autonomic neuropathy, and measurements of macro and micro vascular perfusion in the foot. Subjects were followed for the occurrence of a full thickness skin defect on the foot that took >14 days to heal with a mean follow up 3.7 years. The result revealed that using cox regression analysis, the following factors were independently related to foot ulcer risk, foot insensitivity to the 5.07 monofilament relate risk [95% CI) 2.2 (1.5-3.1), past history of amputation 2.8 (1.8-4.3) or foot ulcer 1.6 (1.2-2.3), insulin use 1.6 (1.1-2.2), charcot deformity 3.5 (1.2-99), 15 mHg Higher dorsal foot transcutaneous PO2 0.8 (0.7-0.9), 20kg higher body weight 1.2 (1.1-14), 0.3 higher ankle-arm index 0.8 (0.7-1.0), poor vision 1.9 (1.4-2.6), and 13 mm Hg orthostatic blood pressure fall 1.2 (1.1-15). Higher ulcer risk was associated with hammer/claw tow deformity and history of laser photocoagulation in certain subgroups. Unrelated to foot ulcer risk in multi variate models were diabetes duration and type, race, smoking status, diabetes education, joint mobility, hallux blood pressure and other foot deformities. The study concluded that certain foot deformities, reduced skin oxygenation and foot perfusion, poor vision, greater body mass and both sensory and autonomic

neuropathy independently influence foot ulcer risk thereby providing support for a multifactorial etiology for diabetic foot ulceration.

Izumi Y. Satterfieldk (2008) conducted a study to analyse the mortality and diabetes related amputations. They evaluated 277 diabetic patient who received their first lower extremity amputation (LEA) during 1999-97. Subjects were followed until December 2003, and categorized by the level of amputation. They compared the mortality difference by level for 0-10 years, 0-10 months, and 10 months-10 years and examined the association of comorbid conditions and death for each level. The results of the study showed that a significant difference in mortality by amputation level for 0-10 years ($P<0.05$) and <10 months ($P<0.01$) survival but not for the one of 10 months- 10 years. For major amputees deceased within 10 months, sepsis was as frequent cause of death as cardio vascular disease. In distal amputees, coronary artery disease, cerebro vascular disease and end stage renal disease were strongly associated with death, but only coronary artery disease was associated death among major amputees. They also concluded that for diabetic patients undergoing first lower extremely amputations, the mortality of major amputees was worse than that of minor amputees due to the difference in first 10 month mortality.

Vijay Viswanathan, Sathyavani kumpatla (2009) conducted a multicentric study to evaluates the pattern and causes of amputations in diabetic patients at Chennai. A total of 1985 type 2 diabetic subjects were selected from 31 centers across India. Out of 1985 subjects, as total of 1295 patients who had undergone amputations both major and minor were included in this analysis. A performa

which contains details on level of amputations, diabetes history, deformity details, causes of amputations and other associated diabetic complications was used to collect the data. Peripheral vascular disease was assessed by using Doppler studies. Presence of neuropathy was assessed by using 10g monofilament and 125 Hz tuning fork. The result of the study revealed that the major cause for the occurrence of amputation among the patients was found to be infection. Almost 90% of patients had infection. Patients had different types of amputations major amputations accounting for 29.1% (n=377) and minor amputations in 70.9% (n=918) of subjects. Among the subjects who underwent major amputations more than 50% accounts for below knee. Amputations and 11.9% above knee Amputation. Out of total amputations, over half of the incident amputations were of toes and rays. Presence of claw toes was seen in 64% of patients. Prevalence of neuropathy (82%) was high and 35% had peripheral vascular disease. The study concluded that infection was found to be major cause of amputation in India. Below knee, toes and rays amputations were the most common type of amputations. Diabetic patients should be educated on foot care and importance of proper foot wear.

Studies related to knowledge on Prevention of foot ulcer

Byron M. Perrin, Hal swerissen (2009) conducted a cross sectional study on the association between foot care self efficacy beliefs and actual foot care behavior in people with peripheral neuropathy in Australia. Ninety-six participants were included in this cross sectional study undertaken. All participants had diabetes and clinically diagnosed loss of protective sensation in

their feet. The participants completed a self report pen-paper questionnaire regarding foot-care self efficacy beliefs, and two aspects of actual foot care behavior- preventive behavior and potentially damaging behaviors. Pearson correlation coefficients were than calculated to determine the association between foot-care self- efficacy beliefs and actual reported foot-care behavior. Multiple analyses of variance was to compare mean self-efficacy and behavior subscale scores for those with a history of foot pathology, and those that did not. The result of the study showed that a small positive correlation ($r=0.2$, $p=0.05$) was found between self- efficacy beliefs and preventative behavior. There was no association between self- efficacy beliefs and potentially- damaging behavior. There was no difference in self- efficacy beliefs in people those had a history of foot pathology compared to those that had no history of foot pathology. They concluded that there was a little association between foot –care self- efficacy beliefs and actual foot care behavior. The usefulness of measuring foot –care self- efficacy beliefs to assess actual self foot-care behavior using currently available instruments is limited in people with diabetes and loss of protective sensation. The study concluded that education appears to have a short term positive impact on foot care behavior and may reduce the rests of foot ulcerations and amputations.

Chamil Vidusha, Madawa Jeewantha (2011) conducted a cross sectional study to determine the level of knowledge and practice of foot care among patients with chronic diabetic foot ulcers. Individuals having diagnosed

diabetic foot ulcers (n=110) were selected from National Hospital of Sri Lanka. They were given an interviewers administered, pretested questionnaire following informed consent. Patient perceptions of foot care were enquired. A scoring system ranging from 0-10 was employed to analyze the responses give for level of knowledge and practice of diabetic foot care. The result revealed that mean age was 58.4 years (SD±8.6) and 57.3% were males. Non healing ulcers were Present among 82.7% and amputations amounted to 38.2%. The Control of diabetes was poor in 60%. Regarding foot care knowledge, the mean score was 8.37, 75.5% had scored above mean and 52.7% were aware of all principles of foot care. Regarding foot care practices, the mean score was 4.55, 47.3% participants had scored below mean and 22.7% had not practiced any foot care principle and hence scored 0. A statically significant difference was existed between the foot care knowledge and practice scores ($p<0.001$, $Z=-8.151$). In the study sample 51% were not educated prior to occurrence of complications. The study concluded that the result was demonstrated a satisfactory knowledge on diabetic foot disease; however their practices of Preventive techniques were unsatisfactory and implementation of a national policy on diabetic foot management and good patient follow-up to increase compliance would help to improve this situation.

H.B Chandalia, D.Sing (2008) did a study to investigate footwear and foot care knowledge as risk factors for foot problems in Indian diabetics. They assessed 300 diabetic and 100 age-and sex matched controls for correlating footwear practices and foot care knowledge and the presence of foot

complications. A structured questionnaire was used to evaluate the knowledge about foot care, type of foot wear used, education level, association of tobacco abuse, and any associated symptoms of foot disease. Clinical evaluation was done by inspection of feet for presence of any external deformities, assessment of sensory functions (Vibration perception threshold, VPT), Vascular status(Foot pulses and ankle brachial ratio) and Presence of any infection. The result revealed that in the diabetes category, 44.7% had not received previous foot care education, 0.6% walked barefoot outdoors and 45% walked barefoot indoors. Fourteen (4.7% patients gave history of foot ulceration in the past and comprised the high risk group; only 2 out of 14 had received foot care education, 6 gave history of tobacco abuse, 8 had symptoms of claudication, 9 had parenthesis, 2 walked barefoot indoors. Average duration of diabetes in the high-risk and low-risk diabetes group was 10.85 ± 6.53 and 9.83 ± 7.99 years, respectively. In the high and low risk diabetes groups, VPT was 19.57 ± 11.26 and 15.20± 10.21 V ($P<0.02$), ankle brachial ratio was 1.05 ±0.19 and 1.14 ± 0.18 9$p<0.05$), and the questionnaire score was 40.8 % and 57% respectively. In the diabetic and the control group, VPT was 15.62 ± 10.39 and 8.36 ± 3.61 VP (<0.01), ankle brachial ratio was 1.14 ± 0.18 and 1.5 ± 0.12, and the questionnaire scores were 57% and 40.3% respectively. They concluded that poor knowledge of foot care and poor foot wear practices were important risks factors for foot problems in diabetes.

Seema Hansain, Naheed Humayun Sheikh (2009) conducted a cross sectional study to assess the knowledge and practices among the diabetic

patients regarding the foot care at Lahore. 150 diabetic respondents fulfilling the inclusion criteria by using non- probability convenience sampling, were included in the study. Their knowledge and practices regarding foot care assessed by a pre-tested questionnaire and classified as good, satisfactory and poor depending upon the score. Fifteen questions each were asked regarding knowledge and practices of foot care. Each question was assigned one mark of score was more than 70% (11-15), it was regarded as good, if score was 50-70% (8-10) it was regarding as satisfactory and if score less than 50% (<8) it was regard as poor, both for knowledge and practice for foot care. The result revealed that the mean age of respondents was 48 ± 10.8 years. About 29.3% respondents had good knowledge 40% had satisfactory knowledge and 30.7% had poor knowledge about foot care. Whereas only 14% respondents had good practices of foot care, 54% had satisfactory practices and 32% had poor practices. Education of the respondents had significant statistical association with knowledge (p-Value <0.001) and practices (p-value <0.001) regarding foot care sex and income per capita had shown no significant statistical association with knowledge and practices regarding foot care. The study concluded that about one third of diabetic patients had poor knowledge about foot care and only very few patients had good practices for foot care. Literacy has significant association with the knowledge and Practices related to foot care in diabetic patients.

Nelda C. Martinez (2005) conducted a study to identify diabetes nurse educators perceptions of the most important foot care behaviors for elderly people to enact daily care. A structural, open- ended questionnaire was mailed to

a regionally stratified random sample of 90 diabetes nurse educators subjects were asked to identify and rank order 8 foot care behaviors perceived important for elderly people with diabetes to enact daily. Data were transcribed and coded into categories and domains using descriptive content analysis. The result revealed that, forty seven diabetes nurse educators responded with a total of 346 foot care behaviors perceived important for elders. Twenty- one major foot care behavior content categories were grouped into 4 domains of descending importance; foot/nail care, footwear/shoes, general health, and foot emergencies. They concluded that diabetes nurse educators should generate a range of baseline data for developing reliable, valid and patient foot care knowledge outcome measure to support national diabetes patient education and self management Program guidelines.

Studies Related to Educational program for the prevention of foot Ulcer

Dorresteijn JA, Kriegsman (2001conducted a study to assess the effect of Patient Education on the prevention of foot ulcers in patients with diabetes mellitus. Eleven Randomised Controlled Trials (RCT) were included- there studies described the effect of foot care education as part of general diabetes education compared with usual care. Two studies examined the effect of foot care education tailored to educational needs compared temporary improvements after an educational intervention. Based on the studies they concluded that there was insufficient robust evidence that ;limited patient education alone is effective in achieving clinical relevant reductions in ulcer and amputation incidence.

Kishida K, Fujiwara Y, Tera O, Takahara, Matsuhisa, Funahashi etal (2011) Conducted a study to assess the effectiveness of a preventive foot care nursing program for 2 years, and collected data from April 2005 to March2009. Patients were divided in to four groups according to the risk classifications and received foot care. They evaluated the incidence of foot ulceration or recurrence and non- ulcerated foot condition. Patient's characteristics were analyzed using paired t-test and Mc Nemar's test, and changes in severity of tenea pedis and grade of callus analysed by wiloxon's signed rank sum test. The result revealed that the program reduced the severity score of tinea pedis. ($P<0.001$) and improved callus grade (P 0.001) .None of the patients of risk –group -3 (history of foot ulceration)showed recurrence of callus related foot ulcers. Six high risks patients developed foot ulceration during the program because of minor injury, but the ulcers healed without development of gangrene. The study concluded that a nurse based foot care program is effective in preventing diabetic foot in diabetic patients.

Maria I Anshmo, Marcia Nery (2010) conducted a cross sectional study to evaluate the prevention and self- inspection behavior of diabetic subjects with foot at ulcer risk, no previous episode, who participated in the routine visits and standardized education provided by the service and who received prescribed foot wear. The evaluation was carried out using a questionnaire scoring from 0-10. Sixty consecutive outpatients under treatment at the service and who participated in all routine care and educational guidance, classified according to the criteria from the international working group on Diabetic foot care system.

Target population was followed –up for at least two years, had participated in the complete treatment program and for longer than one year in the educational program, besides periodically attending medical visit. Presence of Neuropathy, peripheral vascular disease and feet deformities were specifically assessed. Neuropathy diagnosis was determined using vibration perception (128 Hz tuning forts) at two sites, point pressure at seven sites, and ankle reflexes. Arterial blood supply to the foot was determined by palpation of the dorsalis and posterior tibial foot pulses. For diminished or impalpable pulses ankle BrachialPressure Index (ABPI) was performed. The full program was included three step: 1- Medical visit and examination with diagnosis and detailed examination of the disease, risk of ulcer progression, risk of amputation and foot wear prescription. 2- individuals visit with a nursing professional directed towards general preventive care and review of medical prescription 3 –educational group, set up by the nursing team, directed to patients and family members /or care givers. In order to assess the efficacy of the programme, daily routine of food self-examination was analyzed using a simple 10- item questionnaire in which the following parameters where assessed self foot inspection, additional foot inspector performed by the family member, adequate washing and drying, creaming, tow –nail and cuticle cutting, use of proper foot wear, routine shoe inspection, no use of pumice stones or similar abrasive objects, no barefoot walking. Each question was awarded a “0/1” score according to the ‘reply’ where “0” meant a correct procedure and “1” inadequate. Each patient had a final 0-10 score. For the questionnaire, where high scores represented an increased number of inadequate daily practices .

The result of the study revealed that the multidisciplinary educational programme conducted led to constrictive attitudes in self examination.

Juan Jose Galliardino, Gracicla etchegogen (2001) conducted a study to assess the effectiveness of structured educational programme for people with type two diabetes. The patient population included 446 individuals with type 2 diabetes, all patients were <65 years of age, had not required insulin for metabolic control, had no severe complications of diabetes or life-limits illnesses, and had not previously participated in diabetes education courses clinical and therapeutic data and the cost of their pharmacological treatment were collected 6 months before participation in the educational programme (-6months), on entry into the programme (time 0), and at 4,8, and 12 months after initiation of the programme . The result of the study showed that all parameters measured has improved significantly (P<0:001) by 1 year; fasting blood glucose (mean ± SD) 10.6 ± 3.5 vs 8.7 ± 3.0 mmol/1±b A,c 9.0 ± 2.0 Vz 7.8 ±1.6%; body weight 84.6 ±14.7 vs 81.2± 15.2kg: systolic blood pressure 149.6 ± 33.6 vs 142.9 ± 18.8 mmHg; total cholesterol 6.1 ± 1.1 vs 5.4 ± 1.0 mmol/l; and triglycerides 2.7 ± 1.8 vs 2.1 ± 1.2 mmol/l at 12 months, the decrease in pharmacotherapy required for control of diabetes, hypertension, and hyper lipidemia represented a 62% decrease in the annual cost of treatment. The study concluded that an educational approach promoting healthy lifestyle habits and patient empowerment is an effective strategy with the potential to decrease the development of complication related to diabetes as well as the socio economic costs of the disease.

Bened calle, pascual, calvo, Maranes, cerato J etal (2002) conducted a study to assess the efficacy of a preventive foot care programme applied in a normal outpatient setting to decrease the incidence of foot ulcers in people with diabetes diagnosed as having neuropathy by neuropathy disability score, relation to the severity of neuropathy based on the vibration perception threshold (VPT) . A structured continuous preventative foot care programme was designed to ensure proper foot wear, walking foot hygienic, callus care, nail cutting , water temperature checks, bathroom surgery, foot care products, and self inspection diabetic patients (n=308) with neuropathy 72.3 ±/-10.7 years old, 45% mean, 10.9+/-8.8 years duration of diabetes , and Hb A1c 6.5 +/-1.e % , without history of foot lesions were recruited over 3 years and followed-up for 4.6 (3-6) years. The low risk group (n=124) had a VPT <25 v where 184 had a VPT <25 V (high risk). In all 220 patients (71%) complied with the programme compliance being 76 and 68% in low and high risk groups. The result revealed that the low risk group developed nine ulcers in nine patients, and the high risk group 24 ulcers in 19 patients. Among the eight and 19 ulcers, respectively, were in the non compliant patient group and gave a relative risk of 22 and eight compared with people attending the programme. The study concluded that a preventive foot programme reduces the incidence of foot ulceration in people with diabetes with neuropathy and that reduction relating greater in patients with loss severity of neuropathy.

Vijay Viswanathan, Sivagami Madhavan (2005) conducted a study to determine whether the intensive treatment and education strategies for type 2

diabetic patients with high risk diabetic foot disease helps in preventing amputation 4,872 participants included in the study and categorized as high risk subjects according to the international consensus on the diabetic foot (male – to female ratio 3,422 1,450 mean (±SD) age 60.5 ± 8.8 years, mean duration of diabetes 13.7 ±7,6 years) with high risk diabetic foot disease. There were three study groups with diabetes and neuropathy (group 1 : n= 2,871) diabetic neuropathy with deformity (group 3: n=1,766) neuropathy was diagnosed by biothesiometry peripheral vascular disease was diagnosed as an ankle brachial index <0.8 . All the subjects were educated regarding diabetic foot disease and its complications and prevention. The result of the study revealed that among the 1,259 group 3 subjects who came for follow-up , 718 (57%) strictly followed the advice given and 541 (43%) had not followed the advice ulcers present during the recruitment has healed in 585 (82%) subjects who followed the advice, but in only 269 (50%) subjects. Who had not followed the advice . A significantly larger proportion of subjects who had not follow the advice developed newer problems (26%) and required surgical procedures (14%) compared with those who has followed the advice (5 and 3%) respectively. The study conducted that strategies such as intensive management and foot care education are helpful in preventing newer problems and surgery in diabetic foot disease.

CHAPTER-III

RESEARCH METHODOLOGY

Research Methodology is the way to systematically solve the research problem. Methodology occupies a key position as far as research documentation is concerned. It may be understood as a science of studying how research is done. It involves the systematic procedure by which the researcher starts from the intial identification of the problem to its final conclusion.

Research Approach

To accomplish the objective of the study quantitative approach was considered most appropriate.

Research design

The research design adopted for this study is two group pretest post test design.

The design can be represented as

Experimental O_1 XO_2

Control O_1-O_2

X = intervention (Structured teaching Programme on foot care)

O_1 = Pretest in experimental and Control group

O_2 = Post test in experimental and control group

Setting of the study

The setting of the study is Sree Mokambika Medical College, Hospital, Kulasekharam at Kanykumari District. This Hospital is a 500 bedded hospital having average inpatients of 165-170 and 500 new and 350 old cases as outpatients per day. The average inpatients with diabetes mellitus are 20-30 per month. The average outpatients with diabetes are 75-80 per month. This hospital was chosen because it is situated in the same college campus and the sufficient availability of samples.

Variable

Independent variable → teaching programme

Dependent variable → level of knowledge

Population

The population of the study was all patients diagnosed with diabetes mellitus above 20 years old.

Sample Size

The sample size consist of 60 samples of which 30 will be allotted to control group and 30 in experimental group.

Sampling Technique

Purposive sampling was adopted for the present study. The sample was selected based on the inclusion and exclusion criteria.

Sample Selection Criteria

Inclusion criteria

1. Patients diagnosed with diabetes mellitus and more than 20 years of old.
2. Both males and females are included.
3. Diabetic patients who are willing to participate.
4. Patients who know to read/ write Tamil.

Exclusion criteria

1. Patients who are with sensory deprivation
2. Patients who are unconscious.
3. Critically ill and mentally ill patients.

Description of Tool

The tool adopted for this present study is a knowledge Assessing questionnaire prepared by the researcher after the in deplth literature review. The tool consist of two section.

Section A: Demographic variables such as age, sex, family history of diabetes mellitus and education.

Section B: Consist of 25 questions related to knowledge regarding the prevention of foot ulcer. Each correct answer carries I mark and wrong answer carries o mark. Total score is 25 marks. The score was then converted to percentage and classified as follows.

70-100% → Adequate knowledge

51-69% → Moderately adequate knowledge

Below 50% → Inadequate knowledge

Teaching Module

The Teaching module was developed by the researcher after reviewing literature and obtaining experts openion. A structured leaching programme was given for 30 minutes duration with the help of flashcard. After the teaching session a booklet on the same was given. The content of structured teaching module includes definition etiology, risk factors, Symptoms of diabetes mellitus and foot ulcer and preventive measures of foot ulcer.

Validity and Reliability

The research tool and teaching module was prepared on the basis of review of related literature and under the guidance of subject experts. Content validity of the tool was done by five experts-four expert from the field of medical surgical nursing and from one Medical Officer. The necessary suggestions and modification were incorporated in the final preparation of the tool. Based on their valuable suggestions the questionnaire and teaching module attained its final form. The reliability of the tool was assessed by test re-test method (r= 0.80) findings showed that tool was reliable.

Pilot study

In order to test the reliability and practicability of the study, a pilot study was conducted in Sree Mookambika Medical College Hospital among 6 diabetic patients. The results revealed that the study is feasible.

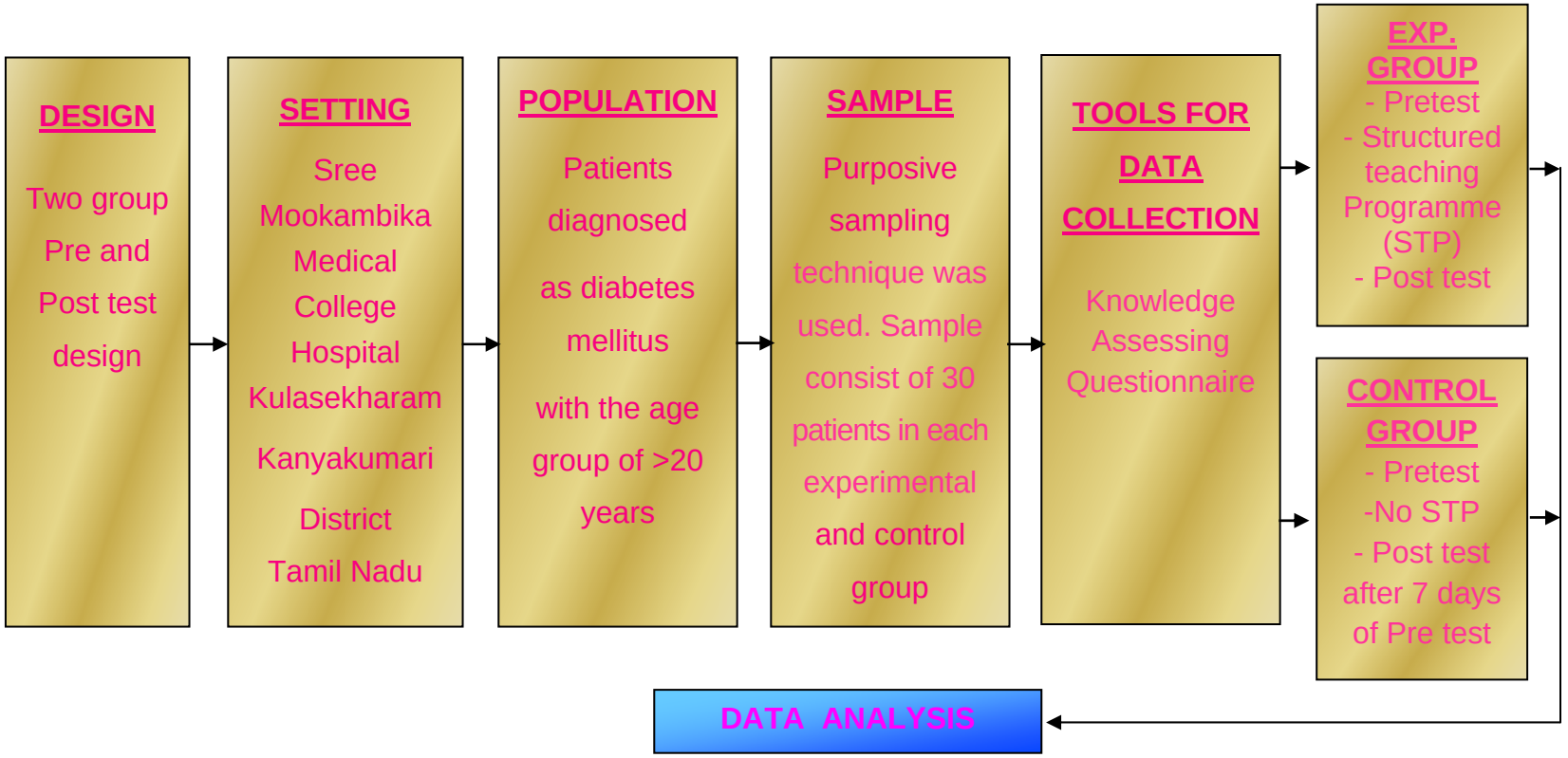
Data Collection Procedure

The proposed study was conducted after the approval of the dissertation committee of Sree Mookambika College of Nursing. Formal permission was obtained from the hospital authorities. The samples were selected based on the inclusion and exclusion criteria. Using purposive sampling technique the clients were allotted to experimental and control group. Pretest was conducted with Knowledge Assessing Questionnaire to assess the level of knowledge regarding foot care both to the experimental group and control group on day 1. Then structured teaching programme was given to the clients only in experimental group on day 1 and then booklet on the same was given to the clients in experimental group and booklet was not given to clients in control group. Post test was conducted for both the experimental and control group on day 7. The data was collected, tabulated and prepared for data analysis.

Plan for data analysis

The data obtained were analyzed by using descriptive and inferential statistics.

SCHEMATIC DIAGRAM OF DATA COLLECTION PROCEDURE



CHAPTER IV

DATA ANALYSIS

This chapter deals with the analysis and interpretation of data collected in accordance with the objectives stated for the study. The data collected were analysed using descriptive and inferential statistics. The findings of the study are presented under the following headings.

Objectives of the Study

1. To assess the level of Knowledge on foot care among clients with diabetes mellitus.
2. To determine the effectiveness of structured teaching programme in improving knowledge on foot care among clients with diabetes mellitus in experimental group and control group.
3. To find out the association between the level of knowledge with the selected demographic Variables such as age, sex family history, education with the prevention of foot ulcer among patients with diabetes mellitus

Distribution is divided into following headings:

Section A : Distribution of samples according to their level of knowledge

Section B : The effectiveness of structured teaching programme on foot care.

Section C : The association of knowledge with selected demographic variables such as age, sex, education, family history of diabetes mellitus.

Section : A

This section deals with frequency distribution of the sample according to the demographic variables.

Table -1: Distribution of samples and matching then for selected demographic variables. N=60

Demographic variables	Experimental group		Control group		χ^2
	F	%	F	%	
Age					
21-40	0	0	1	3.33	
41-60	9	30	7	23.33	2.13
61-80	18	60	15	50.0	
>80	3	10	7	23.33	
Sex					
Male	14	46.67	13	60	0.073
Female	16	53.33	17	40	
Education					
Primary	23	96.67	16	36.67	
Upper Primary	7	3.33	14	63.33	3.24
Secondary	0	0	0	0	
Family History of diabetes mellitus					
Yes	19	66.33	13	43.33	2.4
No	11	36.67	17	56.67	

Table 1 explains the demographic characteristics of the study subjects and matching of the demographic variables. There is no significant association between the demographic variables of experimental and control group (P>0.05) Thus inrespect of the demographic variables both the group were similar. Thus they were comparable.

Table 2: Frequency and Percentage distribution of sample according to their level of knowledge.

Score	Control Group (n=30)				Experimental Group (n=30)			
	Pretest		Posttest		Pretest		Posttest	
	F	%	F	%	F	%	F	%
Inadequate knowledge (0-50%)	10	33.33	5	16.66	10	33.33	1	3.33
Moderately adequate knowledge (51-69 %)	20	66.66	25	83.33	20	66.66	0	0
Adequate knowledge (70-100%)	0	0	0	0	0	0	29	96.6

Table 2 : Shows the frequency and percentage distribution of samples according to their level of knowledge. In the control group Pretest score 33.33% are having inadequate knowledge 66.66% having moderately adequate knowledge 66.66% having moderertely adequate knowledge and in post test score 16.66% are having inadequate knowledge 83.33% are having moderately adequate knowledge. In the experimental group pretest score was 33.33% having

inadequate knowledge 66.66% having moderately knowledge and in post test score 3.33% are having inadequate knowledge 96.6% are having adequate knowledge.

Section:B

This section deals with the effectiveness of structural teaching programme.

Table 3: Effectiveness of structured Teaching Programme on foot care

N=60

	Pretest		Post test		Difference		't'value
Group	Mean	SD	Mean	SD	Mean	SD	
Experimental	13.26	2.66	22.7	3.08	9.4	0.42	17.43*
Control	13.76	1.80	14.63	1.79	0.87	0.01	

* Significant P<0.05

Table : 3 shows that the mean post test score (22.7) of the experimental group was much higher than that of control group (14.63), The 't' Value computed was (t = 17.43) higher than table value at 0.05 level of significance (t = 2.00, P <0.05) So the research hypotheses was supported.

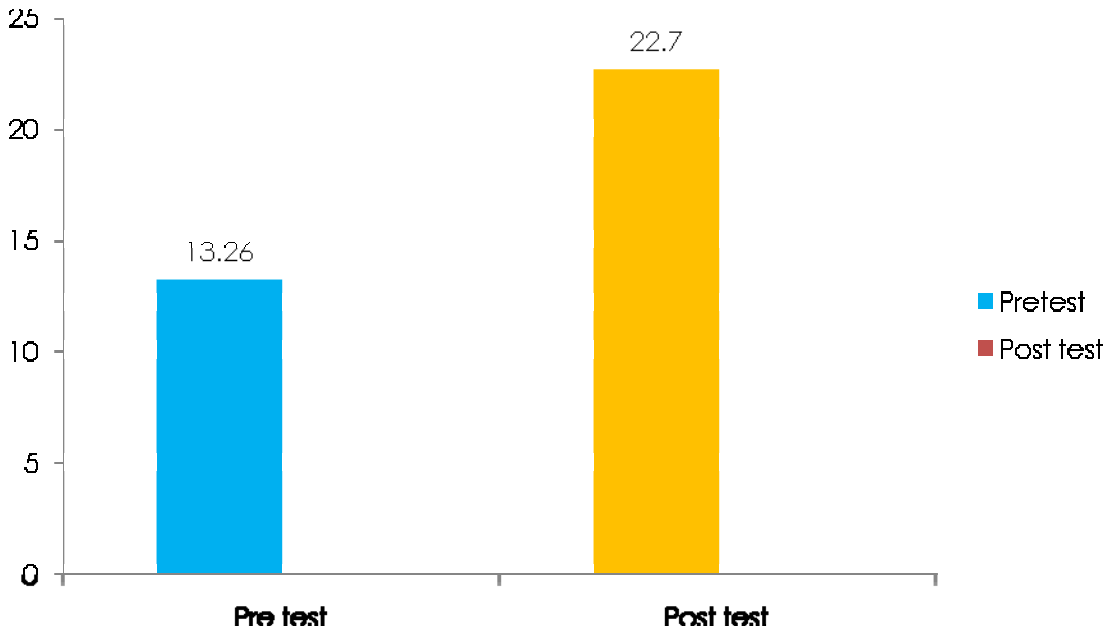


Figure 3: Pre test and Post test score of Experimental group

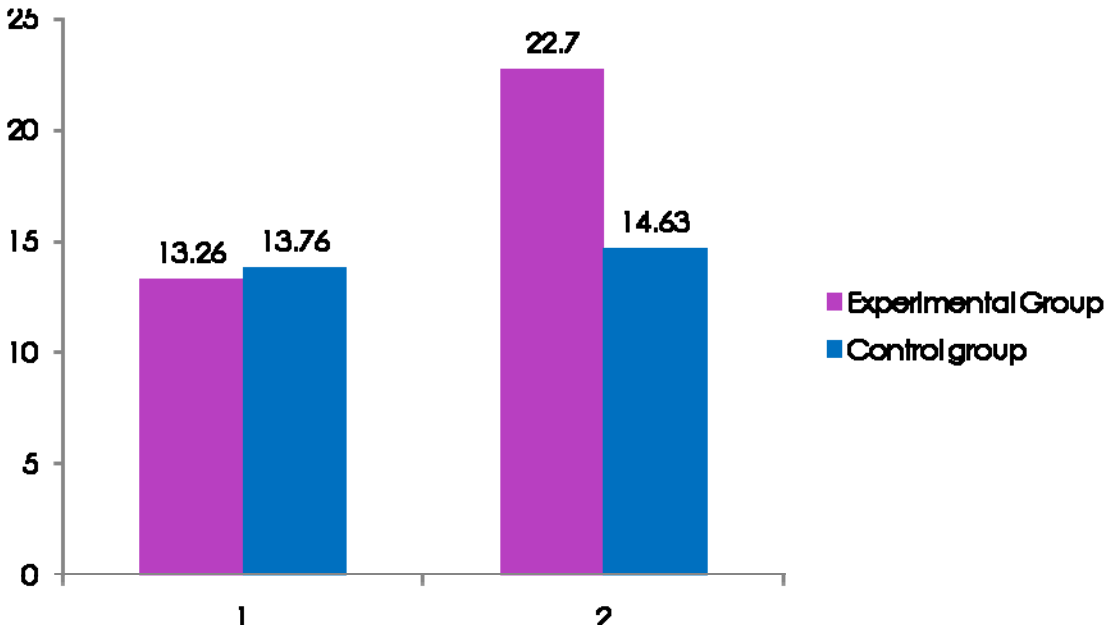


Figure 4: Comparison of mean score of experimental and control group

Table 4: Association of knowledge and demographic variables such as age, sex, education family history of diabetes mellitus

Section:C

Demographic variables	Score			χ^2
	0- 50 %	51 – 69%	70-100%	
Age				
21-40	0	1	0	
41-60	7	9	0	2.25
61-80	10	23	0	
>80	3	7	0	
Sex				
Male	9	18	0	0.0375
Female	12	21	0	
Education				
Primary	14	25	0	
Upper Primary	6	15	0	1.643
Secondary	0	0	0	
Family History of diabetes mellitus				
Yes	9	23	0	0.1467
No	11	17	0	

Table 4 shows the association of knowledge and demographic variables. There is no significant association between the knowledge and selected demographic variables (P>0.05)

CHAPTER V

DISCUSSION

The study was conducted to determine the effectiveness of structured teaching programme in improving knowledge on foot care among patients with diabetes mellitus admitted in Sree Mookambika Medial College hospital, Kulasekharam, Kanyakumari district. The quantitative approach was for the study and two group pretest posttest was adopted. The analysis was done by descriptive and inferential statistics at 5% level of significance (P=0.05), The result were discussed based on the objectives set for the study.

Characteristics of sample:

On comparison of demographic profile of the experimental and control group, it is found that they were similar (P>0.05) thus they were comparable (Table 1).

The first objective of the study was to assess the level of knowledge on foot care among diabetes mellitus

The frequency and percentage distribution of samples according to their level of knowledge in experimental and control group. In the control group pretest score 33.33% were having inadequate knowledge 66.66% were having moderately adequate knowledge and 88.33% having moderately adequate knowledge. Among

the experimental group pretest score 33.33% were having moderately adequate knowledge. In the post test score 3.33% were having inadequate knowledge 96.6 were having adequate knowledge. (Table II)

The second objective of the study was to determine the effectiveness of structured teaching programme on foot care

The level of knowledge on patients regarding foot care before and after structured foot care programme (Table III). The Pre and Post test level of knowledge of both groups were compared and found that the knowledge level of experimental group had increased from pretest to post test as 13.26 $\pm$ 2.66(SD) to 22.7 $\pm$3.08 respectively with the mean score reduction of 9.4 $\pm$ 0.42. The knowledge level of the control group also improved from pretest to post test as 13.76 $\pm$ 1.80 to 14.63 $\pm$ 1.76 respectively with a mean score reduction of 0.87 $\pm$ 0.01.

The mean increase in knowledge of both the groups were compared and found that the mean improvement in the knowledge of experimental group as significantly greater than that of control group. 9.4 $\pm$ 0.42>0.87 $\pm$ 0.01 with the difference of 9.4 mean score ($t = 17.43$, $df = 58$, $P<0.05$). The result showed that there was significant improvement in the knowledge level of patients in experimental group, who received the structured teaching programme

and the mean score was very much higher in experimental group than in control group. The research hypothesis H_1 is accepted. Thus the structured teaching programme on foot care found to be very effective in improving knowledge level.

The study finding is congruent with the study conducted by Juan Jose (2001) 'to assess the effectiveness of structured teaching programme with type two diabetes' for 446 samples, who had no previous exposure of education course. All the parameters like fasting blood glucose, body weight, systolic blood pressure, total cholesterol, triglycerides were assessed, prior to the educational programme, on entry into the programme and at 4,8 and 12 months after the exposure of educational programme. The result revealed that all the parameters had showed a significant improvement ($P<0.05$) after the initiation of programme.

The third objective of the study was to find out the association of knowledge and selected demographic variables.

There was no significant association observed between the level of knowledge and selected demographic variables. Thus the research hypothesis H_2 is rejected (Table IV).

CHAPTER-VI

SUMMARY AND RECOMMENDATION

This Chapter presents the summary, nursing implications of the study findings, conclusion, limitations and recommendations for future research in this field.

Summary of the study:

This study was conducted to determine the effectiveness of structured teaching programme on foot care among clients with diabetes mellitus admitted in Sree Mookambika Medical College Hospital, Kulasekharam, Kanyakumari District.

Objectives of the study:

1. To assess the level of knowledge on foot care among clients with diabetes mellitus.

2. To determine the effectiveness of structured teaching programme in improving knowledge on foot care among patients with diabetes mellitus in experimental group and control group.

3. To find out the association between the level of knowledge with the selected demographic variables such as age, sex, family history, education with the prevention of foot ulcer among patients with diabetes mellitus.

Hypotheses:

The following hypotheses were set for the study and they were tested at 0.05 level of significance

- **H_1** There is a significant improvement in the level of knowledge among patients in experimental group than in control group

- **H_2** There is a significant association between the level of knowledge with selected demographic variables like age, sex, family, history and education.

A quasi experimental, two group pretest post test design was used. A total of 60 patients were selected and were divided into experimental and control group ie, 30 in each group. Pretest was conducted with Knowledge Assessing Questionnaire to assess the level of knowledge regarding foot care both to the experimental group and control group on day 1. Then structured teaching programme was given to the patients only in experimental group on day 1 and the booklet on the same was given to the patients in experimental group and not given to the patients in control group on day 7. The effectiveness of the structured teaching programme was interpreted by students paired t test. J.W. Kenny's open system model was used to evaluate effectiveness of structured teaching programme on foot care.

Data Collection Tool:

The tool consist of two sections.

Sections A : Deals with demographic variables such as age, sex, education, family history of Diabetes Mellitus.

Section B: It consists of 25 question related to knowledge regarding the prevention of foot ulcer. Each correct answer carries 1 mark and wrong answer carries 0 mark. Total score is 25 mark. The score was then converted to percentage and classified as follows.

70 – 100% → Adequate Knowledge.

51 – 69 % → Moderately adequate knowledge.

Below 50 % → Inadequate knowledge.

Salient Features :

The experimental and control group were similar in respect of demographic variables and thus they were comparable.

The level of knowledge among patients in experimental group in very much improved than in control group. The difference in post test score after structured

teaching programme in experimental group was highly significant. The ‘t’ value calculated as found to be t = 17.34.

In this study no association was found between the level of knowledge and the demographic variables such as age, sex, education, family history of diabetes mellitus.

Implication :

Clients health improves more when the health care is coordinated by client himself ie, by placing peoples health in peoples hand.

“Education is most powerful weapon which you can use to change the world” (Nelson Mandela). Structured teaching programme on foot care can help the patient to enrich the knowledge regarding foot care among patients with diabetes admitted in Sree Mookambika Medical College hospital, Kulasekharam, Kanyakumari District. The teaching programme is easy to implement and it is proved to be very effective. Therefore the findings of the research study have considerable implication in nursing administration, nursing practice, nursing education and nursing research.

Nursing Administration :

1. The nurse administrator can influence the staff nurse to incorporate structured teaching on foot care along with discharge planning.

2. The nurse administrator can integrate this knowledge in their inservice education programme.

3. The nurse administrator can add it to the hospital policy for short and long term teaching programme.

4. The nurse administrator should assume leadership roles in training and providing rehabilitation programmes to nurses.

5. The nurse administrator can take steps to improve the awareness of foot care among diabetic patients.

Nursing Education:

1. Nurse educator can help the student nurse to update current knowledge on foot care.

2. Structured teaching programme can be included in the topics of continuing nursing education programme.

3. In community areas student nurse can periodically conduct mass education programmes which will bring awareness to the people in the community regarding the foot care measures.

4. This serves as a reference material for students in the library.

Nursing Practice:

1. Implementation of teaching programme is hospital setup will help improve the communication between the nurse and the patient so that the quality of care can be entered.

2. It helps to reduce hospital readmission by improving quality of life of the patients.

3. Staff nurse can update current knowledge on foot care.

4. Nurse can be conduct teaching sessions for the community people during their field visit that will provide knowledge to the community people and also to the nurses.

Nursing Research :

1. Similar studies can be conducted in large samples so that it could be generalized.

2. Comparative study on teaching only and exercise training can be done.

3. This study can be baseline for future studies to build on.

4. Study can be conducted for non diabetic patients.

Limitation:

1. The study period was extended beyond one month.

2. The sample size of patients of for the experimental group and control group was only 30 and hence generalization is not possible.

3. The study is limited only to the patients admitted in Sree Mookambika Medical College Hospital during the period of data collection.

Conclusion :

1. Majority of the patients have lack of knowledge regarding foot care.
2. The structured teaching programme on foot care appears to be an effective method of improving the knowledge.
3. The knowledge level of patients those who are exposed to foot care programme are much higher than the control group.

Recommendations :

On the basis of the findings of the study the following recommendations were made.

1. The study can be replicated in large sample and similar studies can be done in other hospitals.
2. This study can be done in community setting also.
3. Comparative study can be done among middle age and old age diabetic patients.
4. Similar study can be done both knowledge and practice can be assessed.
5. Study on awareness on foot care and diabetic care to the risk population.

6. Study can be done on the identification of risk group and implication of teaching programme.

7. Retroseptive study can be done to the diabetic survivers to find out the impact of education.

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Electronic Version

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3. http;//www.foot care.com

APPENDIX I

LIST OF EXPERTS FOR THE VALIDATION TO TOOL

1. Mrs. Rajam

   Professor

   CSI College of Nursing

   Karakonam

2. Mrs.Ajitha jyothis

   Assistant Professor

   CSI College of Nursing

   Karakonam

3. Mrs. Shobha

   Assistant Professor

   NIMS College of Nursing

   Aaralummoodu

   Neyattinkara

4. Mrs. Rosalind

   Assistant Professor

   CSI College of Nursing

   Karakonam

5. Dr.J. Kaniraj Peter

   Head of department of medicine

   Sree Mookambika college Hospital

   kulasekharam

APPENDIX - II

EVALUATION CRITERIA CHECK LIST FOR VALIDATION

Introduction

The expert is requested to go through the following criteria for the evaluation. Three columns are given for response and a column for remarks. Kindly place a tick mark in the appropriate column and give remarks.

Interpretation columns

Column 1- Meets the criteria

Column 2- Partly meets the criteria

Column 3- Does not meet the criteria

S.No	Criteria	I	II	III	Remarks
1.	Scoring ➢ Appropriateness ➢ Adequacy ➢ Accurateness ➢ Clarity ➢ Simplicity				
2.	Content ➢ Organization • Logical • Continuity				

	➢ Adequacy ➢ Appropriateness ➢ Relevance				
3.	Language ➢ Appropriateness ➢ Clarity ➢ Simplicity ➢ Concise ➢ Precision				
4.	Practicability ➢ Is it easy to score ➢ Does it precisely measure ➢ The skill ➢ Utility				

Any other suggestion

_____

_____

Signature

Name, designation

Address.

DESCRIPTION OF THE TOOL

Section A : Demographic Data

1. Age

   (a) 21-40 ☐

   (b) 41-60 ☐

   (c) 61-80 ☐

   (d) >80 ☐

2. Sex

   (a) Male ☐

   (b) Female ☐

3. Education

   (a) Primary ☐

   (b) Upper primary ☐

   (c) Secondary ☐

4. Family history

   (a) Yes ☐

   (b) No ☐

Section. B:

Structured Questionnaire

1. What is in meant by diabetes mellitus?

   (a) Increased blood sugar level ☐

   (b) Increased bile pigment ☐

   (c) Increased insulin level ☐

2. What is the main cause of diabetes mellitus?

   (a) Increased insulin level ☐

   (b) Increased bile pigment ☐

   (c) insulin deficiency ☐

3. What is the management of diabetes mellitus

   (a) Reduction of exercise rate ☐

   (b) Eating more amount of food ☐

   (c) Insulin injection/ oral medication ☐

4. Who can be affected with foot ulcer?

(A) person who walk with bare foot ☐

(b) person who has more exposure to sun light ☐

(c) Person who has poor appetite ☐

5. What is the main cause of foot ulcer?

(a) Lack of blood supply ☐

(b) Wet foot ☐

(c) Warm foot ☐

6. What is meant by neuropathic ulcer?

(a) Painful while walking ☐

(b) Inflammation ☐

(c) Impaired sensation ☐

7. What is the clinical feature of ischemic foot?

(a) impaired sensation ☐

(b) Feeling of pain ☐

(c) Inflammation ☐

8. How can the foot ulcer be identified?

(a) Itching ☐

(b) A break in the skin ☐

(c) Sweaty feet ☐

9. What is the main complication of foot ulcer?

(a) Cool and clammy foot ☐

(b) Callus ☐

(c) Blisters ☐

10. What habit is to be avoided by a diabetic patient with foot ulcer?

(a) Chewing tobacco ☐

(b) Chewing betel leaves ☐

(c) Cigarette smoking ☐

11. How can the occurrence of foot ulcer be prevented?

(a) Daily inspection, foot care, and exericise ☐

(b) Take more amount of food ☐

(c) Daily walking with bare foot ☐

12. What is to be used for cleaning the foot?

(a) Mild soup ☐

(b) Iodine ☐

(c) Alcohol ☐

13. What is the best time to cut the nails?

(a) After bath/after soaking in Luke warm water ☐

(b) After food ☐

(c) Before bath ☐

14. What is to be used for trimming the nails?

(a) Sharped scissors ☐

(b) Knife ☐

(c) Razor Blade ☐

15. What is the reason behind to keep the nails cut short?

(a) To prevent scratching / infection ☐

(b) To prevent bad appearance ☐

(c) To prevent feeling of pain at the tip of finger. ☐

16. What is the temperature of water for cleaning the feet?

(a) Below 80^0 F ☐

(b) 100^0 F ☐

(c) 98 ^{0}F ☐

17. What is to be done to warm the feet?

(a) Wrap the foot with blanket / towel that is already warmed . ☐

(b) Apply hot water bottle ☐

(c) Apply heating pad on the feet ☐

18. What is the remedy adapted for sweating foot?

(a) Application of foot power ☐

(b) Application of cool water ☐

(c) Application of iodine ☐

19. What is to be done when blisters or crackle is seen on the foot?

(a) Prick the blisters ☐

(b) Tharough washing ☐

(c) Consult with physician ☐

20. How often doctors consultation is required for a diabetic patient with foot ulcer?

(a) Regular visit ☐

(b) No consultation ☐

(c) Rarely ☐

21. What is the main benefit of foot exercise?

(a) Increase in respiration ☐

(b) Decrease in appetite ☐

(c) Improve in blood circulation ☐

22. How should the patient with foot ulcer keep the feet while they sit or lie down?

(a) Elevated position ☐

(b) Keep flat position ☐

(c) Shaking ☐

23. How much time is to be taken to immerse feet in the lukewarm water?

(a) 20 mts ☐

(b) 30 mts ☐

(c) 10 mts ☐

24. What kind of chapels help to prevent foot ulcer in diabetic clients?

(a) Loosely fitted ☐

(b) Snug but not too tightly ☐

(c) Plastic Chapels ☐

25. What is the surgical management of foot ulcer if not treated ?

(a) Amputation ☐

(b) Cataract surgery ☐

(c) Removal of impure blood ☐

Keys

1.	a
2.	c
3.	c
4.	a
5.	a
6.	c
7.	b
8.	b
9.	c
10.	c
11.	a
12.	a
13.	a
14.	a
15.	a
16.	a
17.	a
18.	a
19.	c
20.	a
21.	c
22.	a
23.	c
24.	b
25.	a

Score

70-100 % : Adequate knowledge

50-69% : Moderately adequate knowledge

<50 : Inadequate knowledge

TEACHING MODULE ON FOOT CARE

Name of the Subject	:	Medical Surgical Nursing
Name of the Topic	:	Improving knowledge regarding foot care
Duration	:	30 mts
Group	:	Diabetic clients
Method of Teaching	:	Lecture level discussion
Central objective	:	At the end the class the patients are acquire knowledge regarding foot care and develop a positive attitude towards the practice of foot care
Specific Objective	:	at the end of the class patients are able to

- define diabetes mellitus
- list out the risk factors
- list out the types
- discuss the etiology
- enumerate the clinical manifestation
- list out the diagnostic evaluation
- enumerate the management
- describe the complications
- enumerate the complication

- describe the diabetic foot
- enumerate the risk factors of foot ulcer
- list out the causes of foot ulcer
- enumerate the clinical manifestation of diabetic foot
- list out the diagnostic findings
- describe the identification of foot ulcer
- enumerate the complication of foot ulcer
- describe the prevention of foot uilcer
- enumerate the strategies to prevent foot ulcer.

TEACHING MODULE ON FOOT CARE

Specific objective	Content	Time	Teaching learning activity/ AV aids	Evaluation
Patients are able to define diabetes mellitus	**Introduction** Diabetes is one of the leading causes of severe morbidity and mortality. The number of people with diabetes in the world is expected to double between 2000 and 2030. The greatest absolute increases of people with diabetes will be in India. **Definition** Diabetes mellitus is a metabolic disorder characterized by glucose intolerance caused by an imbalance between insulin supply and insulin demand. It is occurred due to abnormal carbohydrate metabolism.	1 mt		What is diabetes mellitus?
Patients are able to list out the risk factors	**RISKFACTORS** - Obesity - Age 45 years - Hypertension 140/90 mmHg - Ethinicity	1 mt	Teachers explains the risk factors	What are the risk factors if diabetes?

Patients are able to list out the types	**Types** - Type – 1 (Insulin dependent DM) - Type – 2 (Non Insulin dependent DM) - Gestational diabetes mellitus	1 mt	Teacher explains the types	What are the types of diabetes mellitus?
Patients are able to describe the etiology	**Etiology** ❖ Type – 1 : Autoimmune response - Hereditary factors - Viruses and Human leukocytes ❖ Type -2 : Hereditary factors - Obesity - advancing age	1 mt	Patients are actively listening	
Patients are able to enumerate clinical manifestations	**Clinical manifestation** - Polyurea - Poly dipsia - Poly phagia - weight loss		Teacher explain the clinical manifestation	What are the clinical manifestations?
	Insulin dependent diabetes mellitus - Keetonurea - Weakness and fatigue - Dizziness, recrurrent blurred vision		Patients are actively listening	

	- Prurities - Vaginitis			
Patients are able to list out the diagnostic evaluation	**Non Insulin dependent diabetes mellitus** - Recurrent blurred vision - Pruritis - Skin infection - Vagintis - Weakness, fatigue, dizziness **Diagnostic evaluation** - Blood glucose test (Elevated Blood Glucose) - Fasting blood glucose level (90-130 mg/dl - Post prandial blood sugar (below 18 mg/dl	1 mt 1 mt	Teacher explains the diagnostic evaluation	What are he diagnostic evaluation
Patients are able to enumerate the management	**Management** *Therapeutic Management* - Diatry management & exercise - correct obesity **Pharmacological management** *Oral and diabetic agents*	1 mt		

	- Sulfanylureas - Biguanides *Insulin therapy* Insulin is the enzyme produced by Beetta cells of pancreas and it control blood sugar level. Insulin lower blood glucose by 1. Promoting the transport of glucose in to the cells 2. Inhibiting conversion of glucagons and amino acids to glucose.	1 mt	Teacher explains the management of diabetes mellitus	What is the management of diabetes mellitus?
	Insulin requirement usually increases when a client - Is severally ill - Develops an infection - Undergoes surgery - Suffers trauma			
	Clients response to insulin injection- clients with diabetes vary widely in their response to insulin. The process of regulating insulin dosage may require several weeks. **Surgical management** Transplantation of pancreatic cells.	1 mt		

Patients are able to list out the complications	**Complications** - Acute complications - Hypoglycemia - Hyper osmolar nonketotic syndrome		Teacher explains the complication	What are the complications?
	Long term complications - Macro vascular complication Type 1 – diabetic ketoacidosis - Hyperglycemia - Dehydration and electrolyte loss - Acidosis Type 2 – Coronary artery disease - Hypertension - Peripheral vascular disease - Infection *Micro Vascular Complication* - Retinopathy - Neuropathy *Neuropathic Complication* - Sensor motor neuropathy	2 mt		

	- Pupillary damage - Gastro intestinal disorder - Genito urinary dysfunction *Mixed vascular and Neuropathic disease* - Leg and foot ulcers Foot problems are important contributing factors to the high morbidity and mortality observed in diabetic patients and the economic impact of foot disease is substantial.	1 mt		
Patients are able to describe the meaning of diabetic foot.	**Prevalence** 10-15% Diabetic patient develop ulcers at some point in their lives and 50% hospital admission with foot related problem. - Diabetic foot ulcer is developed due to the micro vascular and macro vascular complication and failure in wound healing process. **Incidence** Diabetic foot ulcer is a one the major complication of Diabetic mellitus. It occurs in 15% of all patients with diabetes and 84% of all lower leg amputations.	1 mt	Teacher explains the risk factors of foot ulcer	What are the risk factors.
Patients are able to enumerate the	**Risk factors of Foot ulcers** - Two main risk factors that cause diabetic foot	1 mt		

risk factors of foot ulcer	ulcer are diabetic neuropathy and lack of blood supply. - Type neuropathy called peripheral neuropathy causes loss of pain and feeling in toes feet, legs and arms due to distal nerve damage and low blood flow. - Blisters and sores appear or numbness areas of the feet and legs such as metatarso phalangial joints, heel region and as a result pressure or injury goes unnoticed and eventually become portal of entry for bacteria and infection. - Walking bare foot and wearing inadequate shoes.			
Patients are able to list out the causes of foot ulcer	**Causes of foot ulceration in diabetic clients** The reason behind ulceration in the feet of diabetic patients are: Neuropathy (lack of sensation) Ischemia (Lack of blood supply) Some feet are more neuropathic than ischemic and sore vice versa . Most ulcerated diabetic feet have a combination of both. **The neuropathy may be of 3 types** *Peripheral neuropathy:*	1 mt	Teacher explains the clinical manifestations	

	Causing a lack of sensation leading to lack of awareness of trauma caused by foreign bodies foot wear etc *Autonomic neuropathy:* Leading to lack of sweating and dry skin thus predisposing to cracked skin. *Motor neuropathy* Leading to weakness in small muscles of foot causing claw toes and other foot deformities. *Neuropathy combined with lack of blood flow (ischemia) tends to ulsceration*.			
Patients are able to enumerate the clinical manifestation of diabetic foot	**Clinical features of Diabetic feet** *Neuropathic foot* ➢ Warn ➢ Dry skin ➢ No discomfort inspite of ulcer ➢ Callus present *Ischemic foot* - Gold & cool - Atrophic often hair loss	1 mt	Teacher explains the clinical manifestations	What are the clinical manifestations

	- More often painful - Pain on walking or rest - Impaired sensation in the foot leads to skin breakdown and ulceration over bony areas . This is called neuropathic ulcer.			
Patients are able to list out the diagnostic findings	**Diagnostic findings** - Doppler ultrasound studies - Diminished pulse is a clean indication for Doppler ultrasound studies - Complete Blood count analysis - Erythrocyte sedimentation rate - Urine analysis - VDRL test - Glucose tolerance test - X-ray should done to relevant osteomyelitis - Smear test reveals common pathogens present in the ulcer - A nerve conduction velocity study of the lower extremities will helpful in differentiating neurological cases	1 mt	Patients are actively listening	
Patients are able to identify the	**Identification** - A break in the skin of the feet		Teacher explains the identification of	What is identification of

foot ulcer	- Foot pain - Bleeding - Foot swelling - Discharge from site of foot ulcer - Foot immobility		foot ulcer	foot ulcer
Patients are able to enumerate the complication	**Complications** *Poor Circulation*: Some simple clues can point to circulating problems. Poor pulses, cold feet, thin blue skin, and lack of hair signal that the feet can not getting enough blood.	2 mt	Teacher explains the complication of foot ulcer.	What are the complications?
	Integumentary Complications Skin disorder such as diabetic dermopathy and necrobiosis lipoid diabeticorum are attributed to micro angiography. Shin sports are brown spots located on the anterior surface of the lower extremities. They are harmless and painless and initially measures less than 10cm diameter. Neurobiosis lipodica diabeticorum is believed to be the result of breakdown of collagen and skin appears as red-yellow lesions *Infection* Recurrring infections such as candida albicans as well as boils and furcencles in undiagnosed patient		Patients are actively listening	

	often lead the healthcare provider to suspect diabetes. *Nerve damage* It may lead to unusual sensation in the feet and legs including burning, numbness, tingling and fatigue, *Skin Changes* Excessive skin dryness scaling creaking indicate poor circulation often skin changes include healed or new ulcers, calluses and broken skin between the toes. *Deformities* The structure and appearance of feet and foot joint can indicate diabetic complication. Nerve damage can lead to joint and other foot deformities. The toes may have peculiar claw the appearance and foot arch and other bones may appear collapsed. The destruction of bones and joints are called charot arthroplasty. *Infectious ulcers that don't heel* An ulcer is a sore in the skin that may go all the way to the bone . Because poor circulation and neuropathy in the feet cuts or blisters can easily turn into ulcers that become infected and wont heel.		Patients are actively listening	

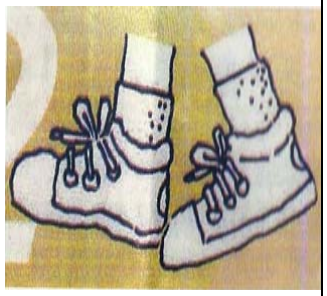
	Corns and calluses When neuropathy is present, you can't tell if your shoes are causing pressure and producing corns or calluses *Dry Cracked skin* Poor circulation and neuropathy make your skin dry. Dry skin result in cracks that may become sores and can lead to infection.			
	Nail disorders The ingrown toe nail (which cause in to the skin on the sides of the nail) and fungal infections can go un noticed because of loss of feelings. If properly un treated they can tend to infection			
	Prevention Controlling blood sugar levels can reduce blood vessel damage and nerve damage that often lead to diabetic foot complication. - Blood sugar control reduces the risk of requiring amputation. - Quit smoking : smoking can worsen heart and	5mt	Teacher explains the prevention of foot ulcer with the help of flashcard	

	vascular problems - The preventive aspect of foot care involve three areas, that is instruction on foot hygiene, daily inspection, proper foot wear, and necessity of prompt treatment of new lesions.		Patients are actively listening	
	Patient education Regarding foot Hygiene - This includes careful cleaning between the toes and proper trimming of nails by patients or by relatives or friends - The patient should be instructed to wash feet daily with mild soap and warm never hot water. Washing gently between the toes and being careful not to break the skin. - Feet should be thoroughly dried by patting with a soft towel, paying special attention to the area between the toes. - Nails should be cleansed with absorbent cotton wrapped around the orange wood stick - Nails should be cut straight across, never shorter than the top of the toes. Trim your nail straight across and file the edge of with a nail file.		Patients are actively listening	

	- The best time to trim the nails after bath/ after soaking in the Luke warm water - Razor blades or knives are prohibited for nail trimming . Only sharp or properly sharped scissors and safe abrasive wheels should be used. - Patients are advised to avoid extreme of temperature especially hot bath water may vary between 80 and 100F - The patient should never apply hot water bottles heating pads, electric heaters or any other form of mechanical heating device that might burn the skin. - Do not put your feet near blowers or fire place etc. - To warm the feet the patient should wrap them with a blanket or towel already slightly warmed . (not over 100 degree F) before going to bed. - Patient should be taught about proper skin care including proper bathing and foot lubrication. - If the feet are dry or scaly they should be rubbed with a skin emollient or moisture		 	

	restoring cream or lotion once daily until they are soft, taking care not to put cream between the toes which may result in maceration. - Apply the lubricating cream or oil after bathing and drying the feet. - If the feet perspire and are moist, or if the toes are cramped a small amount of foot powder should be used and small pieces of lamb's wool should be placed between the toes.			
	Daily Inspection - Patient should be encouraged to examine their feet daily and wash their feet. Dry carefully especially between the toes - They should be check for blisters swelling, discoloration, scratches, corns, calluses, cuts, penetration wounds, local tenderness, and excessive dryness that may lend to fissures. - The use of mirror can aid in seeing the bottom of the feet. Always check between the toes. - Ask the health care provider for a foot check up regularly if there is foot changes			

	- Report skin changes, skin infection or non haling scores to health care provider immediately. - Foot and leg exercise can improve blood circulation blood, Foot should be elevated when sitting or lying down. - Care of calluses and fissures with a goal to prevent progression - Patient can be advised to rub pumice stone in one direction after bath or soaking the foot in the lukewarm water for about 10 minutes - Do not use chemical agents for removal of corns and calluses, plasters or strong antiseptic solution. - Do not use adhesive tape on the feet - Do not cut corns and calluses with a blade . Follow the instruction from your physician or podiatrist			
	Proper Foot Wear Proper shoes which distributes evenly the weight born by plantar aspect of feet should be used.			

	- Select the chapel which is snug but not too tightly - The use of improperly fitting shoes such as bed room slippers or open heeled shoes cause excessive dryness of the skin and fissure may develop. - Avoid walking bare foot even at home - Wear proper shoes with a wide toe box, that fits well and protect your feet. Surgical management **Amputation** The goal of amputation is to preserve extremity length and function while removing all infected pathologic and ischemic tissue.			
	Summary So far as we have seen about the diabetes mellitus, risk factors, types, etiology, clinical manifestation, diagnostic evaluation ,management of diabetes mellitus, complications, meaning of diabetic foot, risk factors of foot ulcer, causes of foot ulcer, clinical manifestation of diabetic foot, diagnostic evaluation, complications of foot ulcer, and foot care / prevention of foot ulcer.			

	Conclusion There is a lot you can do to protect your foot. These information give you the key steps to prevent the diabetic foot including how to care your feet and proper control of your feet is worth effort use these information to take care of your feet starting today.			