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ASSESSMENT OF THE RISK FACTORS OF DIABETES MELLITUS AMONG ADULTS

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ABSTRACT

The chronic metabolic disorder diabetes mellitus is a fast-growing global problem with huge social, health, and economic consequences. It is a multifactorial disease that requires long-term care since it involves major changes in both physical and psychosocial dimension of each patient. The study was conducted to assess the risk factors of diabetes mellitus among adults in a selected hospital in Pathanamthitta district with a view to prepare an information booklet. Objectives of the study were to assess the risk factors of diabetes mellitus among adults and find out the association between risk factors of diabetes mellitus with the selected demographic variables . One fifty adults from a selected hospital at Pathanamthitta district were selected as samples using non probability sampling technique. Research design used was cross sectional descriptive study. A standardized tool called Indian Diabetes Risk Score (IDRS) was used .After the assessment of demographic variables like age, gender, anthropometry, education, occupation, income, personal habits, comorbidities and IDRS parameters an information booklet was given to the high risk and moderate risk group. The findings of the study indicated 39.33% of samples having high risk of developing diabetes mellitus, 55.34% of samples having moderate risk and about 5.33% of samples have low risk of developing diabetes mellitus .The study results showed that there was significant association between risk factors of diabetes mellitus with demographic variables like age (χ^2 =12.97), gender (χ^2 = 6.42), annual income (χ^2=70.85) and dietary habit (χ^2=37.41) at p< 0.05 level. The study concluded that majority of samples have moderate risk of developing diabetes because of their age, gender, annual income and changes in dietary habits.

Keywords: Diabetes mellitus, Adults, information booklet.

CHAPTER - 1

INTRODUCTION

Diabetes is one of the major fast growing non communicable disease that threats global public[1]. According to WHO, diabetes is a chronic metabolic disease characterised by elevated level of blood glucose, which leads

over time to serious damage to heart, blood vessels, eyes, kidneys and nerves. There are two primary forms of diabetes, insulin dependent diabetes mellitus (Type 1 DM) &non insulin dependent diabetes mellitus (Type 2 DM).Type 2 DM mostly results from interaction among genetic, environmental& other risk factors. It is the most common form of DM, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin. Type 2 DM patients are generally independent of exogenous insulin, they need it when blood glucose levels are not well controlled with diet alone or with oral hypoglycemic drugs. Type 1 diabetes (Type1DM), previously known as juvenile diabetes, is an autoimmune disease, that is a form of diabetes in which very little or no insulin is produced by the islets of Langerhans (containing beta cells) of pancreas. All these states that diabetes and its associated complications lowers the quality of life people lives and generate enormous economic and social burden[2].

Background of the problem

According to International Diabetic Foundation, the disease affect more than 50 Million Indians. Thus India has more diabetes than any other country in the world Type 2DM epidemic in India is a result of social influence and changing lifestyle.

Globally as of 2010, an estimated 285 Million people had type 2DM making about 90% of cases. The IDF (International Diabetes Federation). Provide the latest figures, information and projection on the global impact of diabetes 463 Million adults (1 in 2) are living with diabetes in 2019.The number of people living with Diabetes is expected rise to 578million by 2030 1 in 2 adults with diabetes remain undiagnosed[3].

Diabetes as a noncommunicable disease is significant public health problem all over the world is a noncommunicable disease due to lack of clear etiological agent it is heavily dependent on identifying and tackling risk factors. The disturbing finding of Diabetes Mellitus as the earlier age of onset combined with increasing prevalence of diabetes could have adverse effect on the nation's health and economy this underscores the need for mass awareness and screening programme to detect diabetes at an early stage[4].

About 422 million people worldwide have diabetes, the majority living in low and middle income countries, and 1.6 million deaths are directly attributed to diabetes each year. Both the numbers of cases and the prevalence of diabetes have been steadily increasing over the past few decades. The number of people with diabetes in India increased from 26.0 million (95% UI 23.4-28.6) in1990 to 65.0 million (58.7- 71.1) in 2016. The prevalence of diabetes in adults aged 20 years or older in India increased from 5.5% (4.9-6.9) in 1990 to 7.7% (6.9-8.4) in 2016.The current prospective study estimates that the cumulative incidence of type 2 DM in Kerala is 21.9% and the incidence of pre-diabetes is 36.7%. Nearly 60% of the participants who had impaired plasma glucose at baseline converted to type2DM at present, shows an epidemic trend for type 2DM in Kerala[2].

The prevalence of high (IDRS Score >60), moderate (IDRS Score 30 -50), and low (IDRS <30) diabetes risk in young adults (<35 years) was 10.2%, 33.1%, and 56.7% respectively. According to the National survey (NMB – 2017), the young diabetes population was screened across the nation on the basis of IDRS and self reported diabetes, using validated IDRS; 60,194 individuals were selected on the basis of IDRS Score, and 58,823 were selected on the basis of self reported diabetes as young adults (<35 years) Gender – related risk of diabetes was found to be similar in men and women.

Thus, Diabetes mellitus is the pandemic of the new millennium. If we could detect and prevent these risk factors earlier, the onset of development of diabetes itself can be prevented[5].

Need and significance of the study

A cross-sectional study was conducted by the Department of Community Medicine, Travancore Medical College Kollam, Kerala. To assess the risk of developing Type 2 Diabetes Mellitus using Indian Diabetic Risk Score among adults of age more than 30 years in a colony. The sample size was 170. A structured questionnaire was used to assess the risk of development of DM including the Indian Diabetes Risk Score. The total scores were classified into low, medium and high-risk categories. Nearly 62% of the study populations were female, 42.7% had high school education and 44.7% were daily wage employees. Majority (47%) of the study population belonged to high risk and 36.5% belonged to medium risk category for development of DM. The study concluded that the risk assessment should be put forward as a major prevention tool in DM management. The incidence and prevalence of diabetic mellitus is increasing among young adults due to the increased emergence of risk factors. So in todays world it is necessary to identify and control the risk factors to lay down foundation to a healthy population. The world is typically dependent on young adults ageing 2545years for the development of nation. If these people are affected with noncommunicable disease like diabetes mellitus will severely affect the productivity . So it is important to conduct a study to assess the risk factors of diabetes mellitus among adults[6].

Statement of problem

A descriptive study to assess the risk factors of diabetes mellitus among adults in a selected hospital in Pathanamthitta district with a view to prepare an information booklet.

Objectives

1. Assess the risk factors of diabetes mellitus among adults.

2. Find out the association between risk factors of diabetes mellitus with the selected demographic variables.

Operational definitions

1. **Assess**: In this study, assess refers to the evaluation of risk factors of diabetes mellitus among adults of aged 30-60 years.

2. **Diabetes Mellitus**: Diabetes Mellitus is a metabolic disorder caused by many risk factors like lifestyle changes, inactivity, age>45, obesity, family history of diabetes.

3. **Risk factors**: In this study, risk factors are those that lead a person to diabetes mellitus like abdominal obesity, age>45, dietary habits, lifestyle changes, family history of diabetes mellitus, physical inactivity these all can increase a person's chance of developing diabetes mellitus.

4. **Adult**: In this study, adults mean people aged between 30-60 years.

5. **Information booklet**: A booklet is a small, thin book that has a paper cover and that gives information regarding the risk factors and prevention of diabetes mellitus.

Assumption

1. Adults may have the risk of developing diabetes mellitus.

CHAPTER 2

REVIEW OF LITERATURE

Review of literature is one of the most important steps in the research process. It is an account of what is already known about a particular phenomenon .The main purpose of literature review is to convey to the readers about the work already done and the knowledge and ideas that have been already established in a particular topic of research.

A literature review is an account of the previous efforts and achievements of scholars and researchers on a phenomenon. (University of Toronto 2001)[7].

This chapter presents the review of literature related to the present study and it has been organized and presented under the following headings :

1. Assessment of risk factors of diabetes mellitus
2. Prevalence and risk factors of Diabetics
3. Assess the knowledge about Diabetes Mellitus

Assessment of risk factors of diabetes mellitus

A cross-sectional study to assess the risk factors of Type II Diabetes among students of Midwest Public University. The design of the cross-sectional study was based on risk factors for type II diabetes listed by the American Diabetes Association and the

Health Belief Model's constructs of perceived susceptibility, perceived seriousness, and self-efficacy. A survey was distributed to non-diabetic college students aged 18 and older enrolled in general education courses at a Midwest public university. A purposive sampling of 432 students enrolled in Health 101 and Psychology101 at Minnesota State University, Mankato was used in this study. The survey included questions on risk factors for type II diabetes, perceived susceptibility, perceived seriousness, and self-efficacy toward the disease. Data analysis showed the most common risk factors for type II diabetes among college students were lack of physical activity, increased body mass index, and an apple body shape. Males possessed more risk factors than females. Findings from the study in relation to the Health Belief

Model's perceived susceptibility, perceived severity, and self-efficacy showed that on a group level, participants with more risk factors for type II diabetes perceived themselves as more susceptible to the disease, and

participants with familial history of type II diabetes perceived the seriousness of the disease at the same level as those with no family history[8].

A cross sectional study was conducted to assess evaluate a self - administered risk assessment scoring system for identifying Omani adults with type 2 diabetes mellitus. A total of 9.7%of the adults had very high FINDRISC and 17.2 % had slightly elevated risk of developing type 2 diabetes mellitus within 10 years. The risk assessment (family history, waist circumference, body mass index, Physical activity, dietary intake, hypertension and high blood glucose) of T 2 DM was significant and positively related to the prediction of T 2 DM among Omani adults. The study concluded that if modifiable risk factors are altered, the risk assessment score can be considerably reduced. People with high risk of DM should be referred for early intervention and changes to a healthy life style and primary prevention to prevent or delay the onset of T 2 DM [9].

A cross sectional study based on the assessment of type 2 diabetes using the Indian diabetic risk score was conducted in the field practice area of urban health training center of a private medical college in Pune, Maharashtra by in the year 2016 April.

The study conducted on a total of 425 participants aged 20 years and above were screened for risk factors including age, waist circumference, family history of Diabetes and physical activity. Random testing of blood glucose level of participants with a high risk score was carried out using a Glucometer. Statistical analysis of the data was performed by using the chi-squared test and logistic Regression analysis. The study revealed that people at risk of Diabetes was 36.55%. Among high risk participants on univariate analysis, primary education ($p=0.004$) lower socioeconomic class($p=0.002$), less physical activity ($p<0.001$)and high waist circumference ($p<0.001$)were major contributing factors, while in the moderate-risk group, lower socioeconomic class and high waist circumference were the prominent risk factors for diabetes[10].

A community based cross - sectional study was done to assess risk of Type 2 diabetes

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mellitus in adult population using Indian diabetes risk score in field practice area of 0 Urban health Training Centre, Jaipur. A total of 400 individuals participated in the study and various parameters including physical activities, family history of diabetes were assessed. Out of 400 individuals, majority were from 35-49 years of age; among that most of patients were at moderate risk of diabetes. In the study 214 (53.5%) belongs to moderate risk of diabetes; followed by high risk of diabetes 150(37.5%) and the least was low risk of diabetes 36(9%). In the high risk of diabetes most 38.6% were family history of diabetes of single parents, 53.3% were waist

circumference >90 cm in female and >100 cm in male and 34.6% were doing mild exercise in day to day life. The study concluded that screening and early identification of high risk individuals would help to take appropriate intervention like lifestyle modification. It would also help in early diagnosis and treatment to prevent or to delay the onset of diabetes mellitus and it's complications[11].

A community based cross sectional study was done for the assessment of diabetes risk and the factor associated in adult population using IDRS: A community based study in costal Andhra Pradesh. The study subjects were categorized into low, medium, high risk groups based on IDRS scores. Random blood sugar levels of subjects were obtained at time of data collection after taking informed consent. Chi-square test was used to find any significant association between socio-demographic profile, RBS values and risk categories .In the study among 129 subjects, 64.3 % were males, 35.7% were females. IDRS scores indicate 12(9.3%) were in the low risk, 53(41%) were in medium risk and 64 (49.7%) were in high risk category. About 21.7% had Random blood sugar values ≥200mg/dl at the time of study. There was significant association between RBS values and IDRS. The study concluded that the present study showed that majority of subjects were in medium and high risk categories. Hence the study recommended lifestyle modification and further monitoring of blood glucose level to prevent the risk of development of diabetes [12].

A community based cross sectional study was done for the risk assessment of diabetes using the Indian Diabetes risk Score in an urban resettlement colony at kalyanpuri region in East Delhi. The study was conducted among 494 participants, aged 30 years and above. The data collection was done using a semi-structured questionnaires and SPSS version 23 was used for data analysis. In this study 43.7% of the study subjects were aged 50 years or above and majority (64.38%) were females. more than half (59.31%) of the subjects were found to have high risk of diabetes. age and central obesity were found to be significantly associated with the risk of diabetes. the study concluded that early detection of risk of diabetes by periodic screening and appropriate behavioral change communication would be effective in controlling the diabetes crisis[13].

A cross sectional study was conducted to assess the risk of developing Type 2 Diabetes Mellitus using Indian Diabetic Risk Score among adults of age more than 30 years ,in a colony at Kollam. A pre validated, structured questionnaire was used to assess the risk of development of DM including the Indian Diabetic Risk Score. Nearly 62% of study population were female, 42.7% had high school education and 44.7 % were daily wage employees. Majority (47%) of the study population belonged to high risk and 36.5% belonged to medium risk

category for development of DM. The study concluded that the risk assessment should be put forward as a major prevention tool in the DM management[14].

A community-based cross-sectional study was conducted among the urban slum population in North Telangana, India in September 2020. A total of 136 study participants were selected randomly from the records, A pre designed and pre tested structured questionnaire was used for data collection. Assessment of risk of T2DM was done using the IDRS. Of the 136 study participants, 101 (74.3 %) were at high risk (IDRS260) followed by 32 (23 5%) at moderate risk (1DRS 30-50) and three (2.2%) at low risk (IDRS <30), Sixty two (92.5%) individuals in the age group 250 yr were at high risk compared to 34 (63%) in 35-49 yr age group. Most (n=35, 87.5%) of sedentary workers were at high risk compared to those employed in moderate (n-52, 75.4%) and strenuous work (n-14, 51.9%).The study concluded that nearly three
fourth (74.3%) of the study participants were at a high risk of developing T2DM [15.]

Prevalence and risk factors of Diabetics

A peri-urban area (Dukli) of west Tripura from April 2016 to May 2016. Multistage random sampling cross-sectional study, prevalence of diabetes mellitus was found among adult population of a was followed to include 76 participants. Taking house as a sampling unit, every 5th house was chosen for this study. From every selected house, one adult participant was chosen by simple random sampling until desired sample size was attained. Collected data was compiled and analyzed with the help of statistical package for social sciences (SPSS 16.0.). Chi-square, Fischer exact test was applied to find out association. Results: The mean age of the study participants was 42.21±17.65 years, comprised of 23.7% male and 76.3% female. The prevalence of diabetes mellitus was 17.1% among study participants. Diabetes was found highest in
39-58-year age group (37.5%). Males were more affected with diabetes mellitus (22.2%) compared to females (15.5%). The study also revealed a significant association of diabetes mellitus with family history of diabetes mellitus (p value 0.00).Conclusions: Present study showed very high prevalence of diabetes mellitus among adult population. Healthy lifestyle measures might reduce burden of diabetes mellitus which could be evaluated in future research[16].

A cross-sectional study was conducted in the state of Punjab, India based on prevalence and risk factors of diabetes in a large community-based study in North India: results from a STEPS survey in a multistage stratified

sample of 5127individuals.The study reports on the prevalence of diabetes and pre-diabetes in the North Indian state of Punjab as part of a large household NCD Risk Factor Survey. All the subjects were administered the WHO STEPS questionnaire, anthropometric and blood pressure measurements. Every alternate respondent in the sample (n = 2499) was assayed for blood parameters. Results Overall prevalence of DM among the study participants was found out to be 8.3% (95% CI 7.3–9.4%) whereas prevalence of pre diabetes was 6.3% (5.4–7.3%). Age group (45–69 years), marital status, hypertension, obesity and family history of DM were found to be the risk factors significantly associated with DM. Out of all persons with DM, Conclusions The study reported high prevalence of diabetes, especially of undiagnosed cases amongst the adult population, most of whom have uncontrolled blood sugar levels. This indicates the need for systematic screening and awareness program to identify the undiagnosed cases in the community and offer early treatment and regular follow up[17].

A cross sectional study to assess the Prevalence and Risk Factors of Type 2 Diabetes Mellitus among Adults in a Rural Area of Thrissur, Kerala .Study was conducted to determine the prevalence and risk factors of diabetes among adults in rural Kerala, where a community-based cross-sectional study was undertaken among 454 resident adults aged 30 years and above, during December 2012 to 2013. The study subjects were randomly selected via a house-to-house survey after obtaining their informed verbal consent. Data was collected via an interview using a pre-designed pre-tested questionnaire on socio demography, personal history, family history of diabetes, habits and lifestyle. Anthropometric measurements were recorded and the data was analyzed by Chi-square tests and p-value. In this study, the overall prevalence of type 2 diabetes mellitus was 18.7%. The significant risk factors associated with diabetes were age, family history of diabetes and sedentary lifestyle. The prevalence of type 2 Diabetes mellitus among adults in rural Thrissur is high (18.7%) in this study. The risk of developing type 2diabetes is higher among older persons, those with family history of diabetes and those who are sedentary. Lifestyle modification is important to prevent and control diabetes[18].

A cross sectional observational study to assess the Prevalence and its risk factors of diabetic patients in urban area of Palakkad. It was a cross sectional observational study done in urban area covered under urban primary health Centre (UPHC) of Govt.

Medical College, Palakkad. Adults more than 30 years of age in urban area were included and observation period was from 2016-2017.The overall prevalence of diabetes mellitus in the present study was found to be 268 (65.68%). In this 135 (50.37%) were the age group is 50-59 years and almost half 80 (29.85%) were

diagnosed at the age of 40-49 years. Similarly, the risk factors such as age, occupation, diet, smoking, alcohol, truncal obesity and family history were significantly associated with prevalence of T2DM whereas alcohol and hypertension were not. Conclusions was the result of the present study proves that prevalence of T2DM was influenced by many risk factors like age, diet, dyslipidemia, truncal obesity and family history consider more important in the urban studies[19].

A cross-sectional study was conducted by the Dept. of Community Medicine JNMC, Belgravia, Karnataka, India. To assess the Prevalence and risk factors of type 2 diabetes mellitus among adults aged between 30 to 60 years residing in rural area. The sample size of 855(65.24%) was reached . 855 participants were identified and included in the study and the age group 30-49 years, 280 (32.74%) between 50 to 60

years. 48.53% were male and 51.54% were female participants. In the study, 79% of the participants were heavy workers, 17.5% were moderate workers and rest 3.5% were sedentary type of workers. 10.9% were illiterate, and rest 91.1% was literates. 69.3% are BPL card holders. Age, family history of diabetes mellitus, who had sedentary or light grade physical activity[20].

A cross sectional study to assess the Prevalence and Risk Factors of Type 2 Diabetes in Malappuram, Kerala. A cross sectional study was conducted among 798 adults in the age group of 25 to 75 years. Information on their socio demographic, physical, bio chemical and behavioral characteristics, family history of diabetes was collected using the pre tested interview schedule. All known cases of type 2 diabetes and those with Fasting Blood Sugar level>125mg/dl were considered as diabetic. The prevalence of type 2 diabetes and pre diabetes were estimated and their risk factors were statistically analyzed. The prevalence of type 2 diabetes among the study participants was 22.4 percent. The significant risk factors of diabetes found among the adults studied were age, family history of diabetes, both generalized and central obesity, tobacco chewing and hypertension ($p<0.05$). Among them, advancing age, family history of diabetes, central obesity and hypertension were the major predictors of type 2 diabetes in the study population ($p<0.001$).High prevalence of diabetes was observed in the study

area [21].

A cross-sectional study aimed to determine the prevalence of prediabetes and its risk among nurses in Dubai Hospital-Dubai Health Authority. A convenience sample was selected including 674 nurses estimated using

Open Epi software. Data was collected using a standardized diabetes risk assessment tool (The Finnish Diabetes Risk Score [FINDRISC]). Inclusion criteria were staff nurses working in Dubai Hospital in the age group from 25 to 64 years and nondiabetic staff in Dubai Hospital; an operational definition of prediabetes was used. The data were coded, and data entry and data analysis were made using SPSS 20 software version. The data were tested at a level of significance of 95%. The study revealed that 42.7% of the participants had a low prediabetes risk, 38.4% had a slightly elevated prediabetes risk, 10.8% had a moderate prediabetes risk, 7.6% had a high prediabetes risk, and 0.5% had a very high prediabetes risk. Age, body mass index, waist circumference, history of antihypertensive drug treatment, history of high blood glucose, family history of diabetes, daily consumption of fruits, berries, or vegetables, and daily physical activity had a significant relationship with the prediabetes test ($p < 0.01$). Study concluded that Frequent testing is recommended to follow the risk score. Since we cannot control unmodifiable factors, such as age and family history, we can control modifiable factors, such as having a healthy lifestyle with healthy food and exercise to decrease the risk of developing type 2 diabetes. Health promotion and education can decrease the risk of developing type 2 diabetes[22].

Assess the knowledge about Diabetes Mellitus

A study to assess the level of awareness and knowledge of the population about diabetes mellitus risk factors and preventative measures. The objective of this study was to measure this knowledge among attendees of a primary care center in eastern Saudi Arabia. A sample of 300 male and female Saudis aged 18 years and older from the catchment area of the Aqrabya Primary Care Center were randomly selected for this cross-sectional survey. Data were collected through a structured face- to-face interview using a pre-piloted Arabic instrument. Regression analysis was used to identify the predictors of knowledge. The 288 participants interviewed included 100 males and 188 females. The mean (SD) age was 44.7 (12.6) years for males and 33.8 (12.4) years for females. Fewer than 50% of participants knew about DM risk factors and preventive measures. In a regression model that included age, sex and education, education had a statistically significant positive association with knowledge of risk factors (odds ratio 12.5, 95% CI 6.26-25.2, P<.001) and preventive measures (odds ratio 7.6, 95% CI 4.01-14.2, P<.001), and age had a statistically significant negative association with knowledge of DM risk factors (odds ratio 0.377,

95% CI 0.207-0.685, P=.001) and prevention (odds ratio 0.407, 95% CI 0.231-0.717, P=.001). The main risk factor stated by participants was obesity (35.8%), while the main preventive measure mentioned was weight reduction (37.9%)[23].

A cross-sectional study to assess the awareness regarding risk factors of type 2 diabetes among individuals attending a tertiary-care hospital in Bangladesh. Under an analytical cross-sectional design, 400 non-diabetic respondents, aged >30 years, were conveniently selected from the Out-Patient Department of BIRDEM, the tertiary care hospital of the Diabetic Association of Bangladesh. A pretested, semi-structured questionnaire was developed to assess knowledge and attitude of the respondents. Respondents' level of knowledge and attitude were categorized as good, average and poor (GAP). Multivariate along with bivariate statistics was used to measure knowledge and attitude of type 2 diabetes. Among the respondents the levels of knowledge and attitude were 13%, 10% good; 68%, 75% average and 19%, 14% poor respectively. In multivariate analysis, high literacy ($p = 0.0001$), respondents who are in service ($p = 0.02$) and family history of diabetes ($p = 0.02$) were found significantly associated with the knowledge score after adjustment. Respondents who had passed secondary and higher secondary education had a significant association ($p = 0.03$) with the attitude score. Housewives had a significantly lower attitude score than others ($p = 0.04$). Family history of diabetes and knowledge on the risk factors of diabetes showed significant positive association with the attitude score ($p = 0.013$ and $p = 0.0001$ respectively).Overall, respondents participating in this study have average awareness regarding risk factors of diabetes. From a public health perspective, there is a decisive need of innovative prevention programs for targeting people including high-risk individuals[24].

A community-based cross-sectional study was done in Cheranall or Panchayat (self- administration unit) of district Ernakulum, Kerala, to assess the knowledge of diabetes mellitus among adults in population. Six wards were randomly chosen from 16 wards of the Panchayat. From the selected wards, 190 houses were randomly willing and available at the time of visit were interviewed. For any house with more than one eligible person, interview was carried out separately to avoid family influence. In addition to baseline data on socio demographic characteristics and family history of diabetes mellitus, the questionnaire covered different aspects of diabetes mellitus. Besides, inquiry about diabetes status (self-reported) was made. Socioeconomic status was assessed by Prasad's Social Scale. There, six on treatment and complications, and five on lifestyle modifications. All 23 were a total of 23 questions, four on general awareness of diabetes mellitus, six on risk factors questions were scored. Maximum possible score was 23. Knowledge score of <9 was considered as poor, 9-17 as average and above 17 was taken as good. Data were analyzed using SPSS version 11 (SPSS Inc., Chicago, USA). Descriptive

analysis was done for socio demographic variables and t-test and ANOVA were used to ascertain the level of significance of predictors of awareness[25].

A cross-sectional community based study was conducted to assess the 1 knowledge of Diabetes Mellitus in the Urbanares9 of Klang District, Malaysia for a period of 4 months. Taman Sri Andals, Taman Klang Jaya, Bandar Bukit Tinggi and Bandar Botanic or Klang district b, Selangor were the study areas for the study. A sample of 400 participants was randomly selected and data was collected using a structured questionnaire under non-contrived setting. In this study, only a few respondents (2%) lay within range of 64 years old and above. On the other hand, around 32 % of the respondents fall between 24-44 years old and 16.5 % of respondents fall between 45 and 64 years old. The study concluded that there is difference in knowledge on Diabetes Mellitus among different age groups and ethnicity, whereas the gender of respondents and educational level of respondents donot have significant difference[26].

A Descriptive Study to Assess the Knowledge Regarding Diabetes Mellitus among the Residents of Selected Rural Community, Gurdaspur, Punjab**.** To assess the level knowledge of selected community residents regarding diabetes mellitus. A Non- Experimental, Quantitative Research Approach And Univariant Descriptive Research design was used in present study .The result of present study revealed that out of 100 community people, 90% have average knowledge, 9% have good knowledge and only 1% have poor knowledge. The result revealed that there was a significant association found with the age, education, and occupation at the level of significance <0.05 and there was no significant association found between the level of knowledge and their Gender, Type of Family, Presence of Disease, Duration of Disease, Type of Medication and Source of Information[27].

Summary

Through these reviews it reveals that there is high prevalence of the development of risk factors of diabetes mellitus among adults. So in todays world it necessary to identify and control the risk factors to lay down foundation to a healthy population.

CHAPTER 3

METHODOLOGY

Research methodology is the specific procedure or technique used to identify, select, process, and analyze information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability[28].

Research Approach

The research approach is a plan and procedure that consists of the steps of broad assumptions to detailed methods of data collection, analysis, and interpretation. It is an important element in research design, which governs it. In terms of data collection there are qualitative and quantitative research approaches[29].

Qualitative research is a systematic, subjective methodological approach used to describe life experiences and give them meaning, whereas, a quantitative research is a formal, objective, systematic process used to describe variables, test relationships between them and examine cause-and-effect interaction among variables[29.]

In this study we used "Quantitative research approach".

Research Design

A research design is the framework or guide used for the planning, implementation and analysis of a study. It is a systematic plan of what is to be done, how it will be done and how the data will be analyzed. Research design basically provides an outline of how the research will be carried out and the methods that will be used.

"The research design is the master plan specifying the methods and procedures for collecting and analyzing the needed information in a research study". (Dr. Suresh K Sharma)

In this study the research design is Cross Sectional descriptive study.

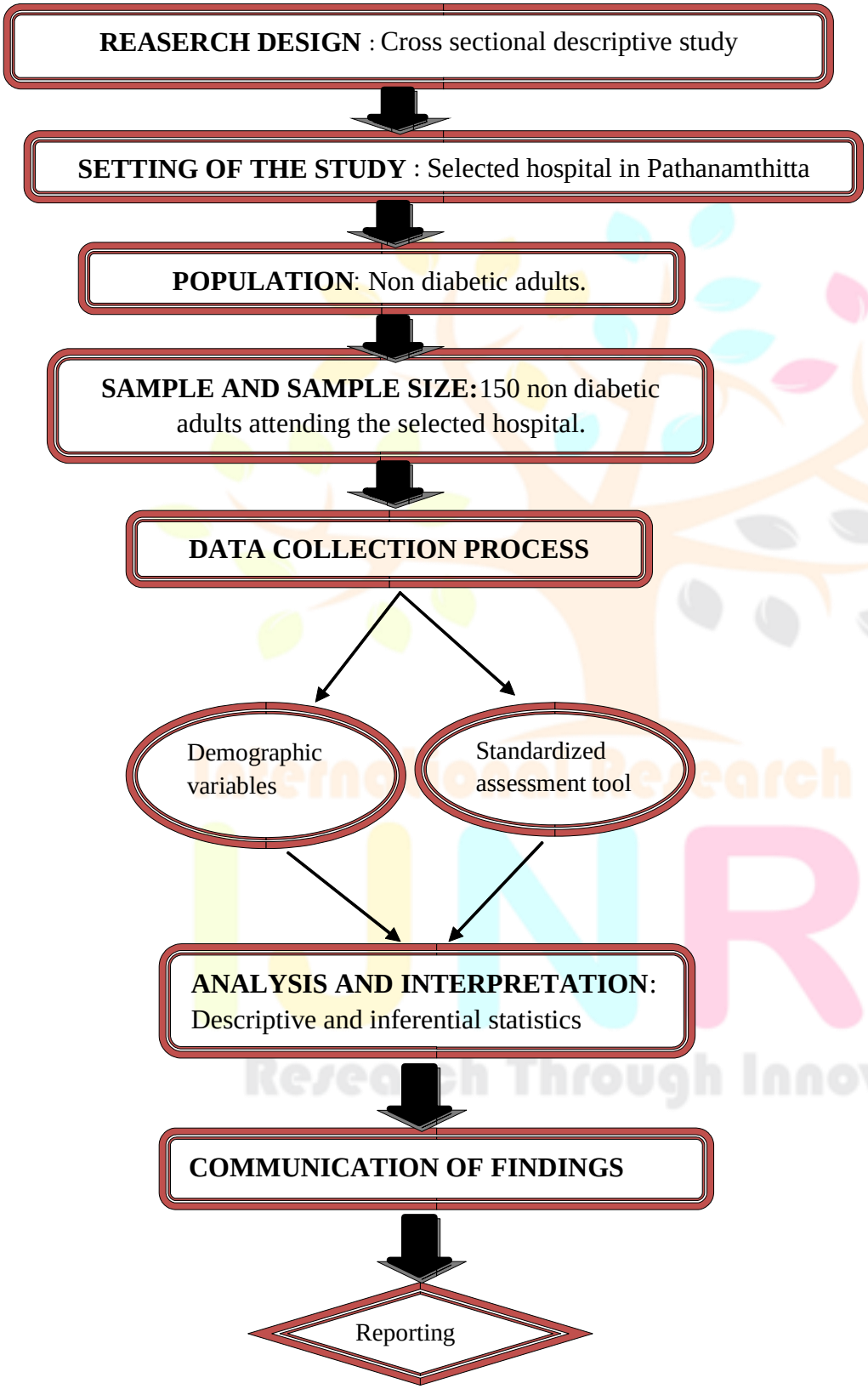

Figure: 1 – Schematic representation of the study Setting of the study

Research setting is the physical, social, or experimental context within which research is conducted. The present study will be conducted in OPDs and wards in a selected hospital in Pathanamthitta district.

Population

Population is the aggregation of all the units in which a researcher is interested or it is the set of people or entities to which the results of a research are to be generalized[30].

Sample and Sampling technique

Sample size :150

The sampling technique used in the present study is Non-probability purposive sampling.

Inclusion criteria:

1. Adults of age 30-60 years from OPDs and wards.
2. Those who read and write Malayalam.

Exclusion criteria:

1. Those who are diagnosed with DM.
2. Those who are not willing to participate in the study.
3. Those who are critically ill.

Tool

Description of tool

A research tool is a device used to measure the concept of interest in a research project that a researcher uses to collect data. Indian Diabetes Risk Score [IDRS], a standardized tool, is used in the present study. It was developed using four simple parameters namely age, abdominal obesity, family history of diabetes, and physical activity with total score as 100.Subjects with IDRS of <30 was categorized as low risk, 30-50 as medium risk and >60 as high risk for diabetes.

Section A

Tool to assess the risk factors of diabetes mellitus consist of age, gender, Body mass index, educational qualification, occupation, annual income, personal habits.

Section B

Standardized assessment tool like Indian Diabetes Risk Score (IDRS), a simple screening tool for prediction of undiagnosed diabetes.

Content validity

Content validity is concerned with scope of coverage of the content area to be measured. More often it is applied in tests of knowledge measurement. It is mostly used in measuring complex psychologic tests of a person. It is a case of expert judgement about the content area included in the research instrument to measure a particular phenomenon. Judgement of the content validity may be subjective and is based on previous researcher and experts opinion about the adequacy, and completness of the content of instrument. Generally, this validity is ensured through the judgements of experts about the content[7]. In the study information booklet was validated by subject experts.

Pilot study

Pilot study is a small version of a proposed study conducted to refine the methodology. It is developed using similar subjects, similar objectives, the same setting and the same data collection and analysis technique. The objective of the pilot study is to help the researchers to become familiar with use of tool and find out the difficulties to conduct the main study.

After getting written permission from the concerned authorities pilot study was conducted on 10 samples attending OPDs of selected hospital Kozhencherry on 23/11/2021.

The participants who fulfill the inclusion criteria will be included in the study.

The demographic variables and tool where distributed to the participants who met criteria.

After obtaining the consent from the samples in the study, tool were given to samples and data collected to assess the risk of diabetic mellitus and confidentially will be maintained throughout the study.

Data collection process

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypothesis, and evaluate outcomes[31].

Data collection process

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypothesis, and evaluate outcomes[31].

1. Scores on the diabetic risk factors of adults and the demographic variables will be analysed using descriptive statistics frequency and percentage median and range.
2. Association between the risk factors of diabetes with the demographic variables will be analysed using Chi Square Test.

Plan for data analysis

Data analysis is the process of systematically applying statistical and logical techniques to describe and illustrate, condense and recap, and evaluate data[32].

CHAPTER-4

ANALYSIS AND INTERPRETATION

Analysis is the process of organizing and synthesizing the data so as to answer research questions and test hypothesis.

This chapter deals with the analysis and interpretation of data obtained from the study conducted among 150 at risk non diabetics of selected hospital in Pathanamthitta

district.

Master data was processed and analyzed on the basis of the Objectives and hypotheses formulated for the present study using descriptive and inferential statistics and are described with the help of tables and graphs.

Organization of the study

The data collected were organized, tabulated, analyzed and interpreted by using descriptive and inferential statistics and is presented under the following sections:

Section I: Description of demographic variables of samples.

Section II: Assessment of risk factors of diabetes mellitus among adults based on IDRS scale.

Section III: Association between risk factors of diabetes mellitus with the selected demographic variables.

Section I : Description of demographic variables of samples.

Table 1: Frequency and percentage distribution of samples according to age.

N = 150

Age in years	Frequency	Percentage (%)
30-35years	23	15.33
36-49 years	74	49.33
50-60 years	53	35.34

The data presented in the table 1 depicts that 15.33% samples were within the age group of 30-35years, 49.33% samples were within the age group of 36-49 years and 35.34% samples were within the age group of 50-60 years.

Table 2: Frequency and percentage distribution of samples according to gender.

N= 150

Gender	Frequency	Percentage (%)
Male	43	29
Female	107	71

The data present in the table 2 depicts that 29% samples were males and 71% samples were females.

Table 3:Frequency and percentage distribution of samples according to Body Mass Index

N = 150

Body Mass Index	Frequency	Percentage (%)
Underweight	4	2
Normal weight	55	37
Overweight	63	42
Obese	28	19

The data presented in the table 3 depicts that 2% samples were underweight, 37% samples were normal weight, 42% samples were overweight and 19% samples were obese.

Table 4: Frequency and percentage distribution of samples according to educational status.

N=150

Educational status	Frequency	Percentage (%)
Illiterate	3	2
Secondary education	53	35.4
Higher secondary education	27	18
Graduate/post graduate	67	44.6

The data presented in the table 4 depicts that 2% of samples were illiterate, 35.4% of samples were having secondary education, 18% of samples were having higher secondary education and 44.6% of samples were

Table 5: Frequency and percentage distribution of samples according to occupation.

N=150

Occupation	Frequency	Percentage (%)
Government / Private employee	66	44
Self employee	17	11.3
Skilled labour	13	8.7
Farmer	4	2.7
Unemployment	50	33.3

The data presented in the table 5 depicts 44% of samples were government/private employee, 11.3%samples were self employed, 8.7% samples were the skilled labour,

2.7% were farmer and 33.3% were unemployed.

Table 6: Frequency and percentage distribution of samples according to annual income

N=150

Annual income in Rupees	Frequency	Percentage (%)
5,000-25,000	39	26
25,001-50,000	38	25.4
50,001-1,00,000	52	34.6
1,00,001-5,00,000	21	14

The data presented in the table 6 depicts that 26% of samples were having annual income 5,000-25,000, 25.4% of samples were having annual income 25,001-50,000, 34.6% of samples were having annual income 50,001-1,00,000 and 14% of samples were having annual income 1,00,001-5,00,00.

Table 7: Frequency and percentage distribution of samples according to dietary pattern.

N= 150

Dietary pattern	Frequency	Percentage (%)
Vegetarian 2	1.33	
Non vegetarian	17	11.34
Both 131	87.33	

The data present in the table 7 depicts 1.33% of samples were vegetarian, 11.34% of samples were non vegetarian, 87.33% of samples consumed both vegetarian and non vegetarian food items.

Table 8 : Frequency and percentage distribution of samples according to alcohol consumption.

N =150

Alcohol consumption	Frequency	Percentage (%)
Yes	13	8.7
No	137	91.3

The data presented in the table 8 depicts that 8.76% of samples consumed alcohol and 91.3% of samples were non alcoholic.

Table 9: Frequency and percentage distribution of samples according to history of smoking .

N =150

History of Smoking	Frequency	Percentage (%)
Yes	7	4.67
No	143	95.33

The data presented in the table 9 depicts that 4.67% of samples were smokers and 95.33% of samples were non smokers.

Table 10 : Frequency and percentage distribution of samples according to co morbidities

N=150

Comorbidities	Frequency	Percentage (%)
Yes	46	31
No	104	69

The data presented in table 10 depicts that 31% of samples had co morbidities and 69% of samples had no comorbidities.

Section II : Assessment of risk factors of diabetes mellitus among adults based on IDRS scale.

Table 11: Frequency and percentage of risk of developing diabetes mellitus among adults.

N=150

Sl.No	Type of risk	Score	Frequency	Percentage (%)
1	Low risk	<30	8	5.33
2	Moderate risk	30-60	83	55.34
3	High risk	>60	59	39.33

The data presented in the table 7 reveals the 5.33% of the samples were having low risk of developing diabetes mellitus, 55.34% of samples were having moderate risk of developing diabetes mellitus and 39.33% of samples were having high risk of developing diabetes mellitus.

Section III : Association between risk factors of diabetes mellitus with the selected demographic variables.

The association between risk factors of diabetes mellitus with selected demographic variables were analyzed using Chi square test.

Table 12: Association of levels of risk of developing diabetes mellitus with demographic variables.

N=150

Sl. No	Demographic variables	Low risk f	Low risk %	Moderate risk f	Moderate risk %	High risk f	High risk %	χ^2
1	Age							
	30-35 yrs	3	2	18	12	2	1.33	12.97*
	36-49 yrs	2	1.33	40	26.66	32	21.33	
	50-60 yrs	3	2	25	26.66	25	16.66	
2	Gender							
	Male	2	1.33	29	19.33	12	8	6.42*
	Female	6	4	54	71.33	47	1.33	
3	BMI							
	Underweight	1	0.66	2	1.33	1	0.66	6.66
	Normal weight	4	2.66	34	22.66	17	11.33	
	Overweight	2	1.33	33	22	28	18.66	
	Obese	1	0.66	14	9.33	13	8.66	

Table 12: Association of levels of risk of developing diabetes mellitus with demographic variables. (Cont.)

N=150

Sl. No.	Demographic variables	Low risk f	Low risk %	Moderate risk f	Moderate risk %	High risk f	High risk %	χ^2
4	Education							
	Illiterate	0	0	1	0.66	2	1.33	1.89
	Secondary Education	3	2	30	20	20	13.33	
	Higher Secondary	1	0.66	17	11.33	9	6	
	Graduate /Post Graduate	4	2.66	35	23.33	28	18.66	
5	Occupation							
	Govt.or Private Employee	4	2.66	37	24.66	25	16.66	4.83
	Self Employee	1	0.66	10	6.66	6	4	
	Skilled Labour	0	0	7	4.66	6	4	
	Farmer	0	0	4	2.66	0	0	
	Unemployed	3	2	25	16.66	22	14.66	

Table 12: Association of levels of risk of developing diabetes mellitus with demographic variables. (Cont.)

N=150

Sl. No	Demographic variables	Low risk f	%	Moderate risk f	%	High risk f	%	χ^2
6	Annual income in Rupees							
	5000-25000	3	2	21	14	15	10	70.85*
	25001-50000	2	1.33	22	14	14	9.33	
	50001-100000	2	1.33	28	18.66	22	14.66	
	100001-500000	1	0.66	12	8	8	5.33	
7	Dietary pattern							
	Vegetarian	0	0	2	1.33	0	0	37.41*
	Non Vegetarian	1	0.66	7	4.66	9	6	
	Both	7	4.66	74	49.33	50	33.33	
8	Alcohol							
	Yes	1	0.66	10	6.66	2	1.33	3.41
	No	7	4.66	73	48.66	57	38	

Table 12: Association of levels of risk of developing diabetes mellitus with demographic variables. (Cont.)

N=150

Sl. No.	Demographic variables	Low risk f	Low risk %	Moderate risk f	Moderate risk %	High risk f	High risk %	χ^2
9	Smoking							
	Yes	1	0.66	3	2	3	2	1.32
	No	7	4.66	79	4.66	57	38	
10	Co-Morbidities							
	Yes	2	1.33	27	18	17	11.33	0.28
	No	6	4	54	22.66	41	27.33	

*P<0.05

*= significant association

The table 11 depicts that computed chi square values for age (χ^2 =12.97) is greater than the table value (9.48), gender (χ^2 = 6.42) is greater than the table value (χ^2 = 5.99), annual income (χ^2 = 70.85) is greater than the table value (χ^2 = 12.59) and dietary habits (χ^2 = 37.41) is greater than the table value (χ^2 =9.48) hence these demographic variables are significantly associated with risk factors of diabetes mellitus .But there was no significant association found between the risk factors of diabetes mellitus with the selected demographic variables such as age (χ^2=12.97) , BMI (χ^2 =6.66),education (χ^2 =1.89), occupation (χ^2 =4.83) , alcohol (χ^2 = 3.41), smoking (χ^2 =1.32) and comorbidities (χ^2 = 0.28

CHAPTER 5

RESULTS

The description of results enables researcher to reduce, summarize, organize, evaluate, interpret and communicate numerical information.

The study was done to assess the risk factors of diabetes among adult in a selected hospital in Pathanamthitta district with a view to prepare an information booklet.

In order to interpret a meaningful answer under study, the data were processed and analysed in a systematic manner, so that patterns and relationship that exist between the data groups can be discerned.

Objectives of the study

1. Assess the diabetic risk factors among adults
2. Find out association between risk factors of diabetes and demographic variables.

Assumption

1. Adults may have the risk of developing diabetes mellitus.

Results

Section 1: Description of the demographic variables of samples .

1. Most of the samples were in the age group of 36-49 years of age (49.33%).
2. Majority of the samples (71%) were females .
3. Most of the samples (42%) were over weight.
4. 44.6% of samples were graduate or post graduate .
5. Most of the samples (44%) were Government or private employees.
6. Most of the samples (34.6%) annual income was 50,001-1,00,000 rs
7. Majority of samples (87.33%) had both vegetarian and non vegetarian dietary pattern.
8. Majority of samples (91.3%) were non alcoholic.
9. Majority of the samples (95.33%) had non smoking history.
10. Majority of the samples (69%) did not had comorbidities

Section 2 : Description about the assessment of risk factors of diabetes mellitus among adults based on IDRS scale

The risk of developing diabetes mellitus among non diabetes adults are based on International Diabetes Risk Score revealed that 5.33% of the samples had low risk of developing diabetes mellitus, 55.34% of samples had moderate risk of developing diabetes mellitus and 39.33% of samples had high risk of developing diabetes mellitus.

Section 3 : Description about the association between risk factors of diabetes mellitus with the selected demographic variables.

There was association between risk factors of diabetes mellitus with age (p=9.488), gender (p=5.991), annual income (p=12.592) and dietary pattern (p=9.488).

Summary

This chapter deals with the results of the study.

CHAPTER 6

DISCUSSION, SUMMARY AND CONCLUSION

This chapter deals with the discussion of the results of the study, summary and conclusion, further suggestions and recommendations for the future research works, limitations of the study and nursing implications related to the present research study.

The present study was conducted to assess the effect of self instructional module regarding prevention of diabetes. In order to achieve the objectives of the study a quantitative approach was adopted. The researcher was able to find many studies based on the prevention of diabetes mellitus and its risk identification. Making people aware about diabetes mellitus and its prevention are the things which can be done by the health professionals to have control of this condition, therefore education regarding this aspect carries a higher significance in the present scenario.

Discussion

Discussion refers to the findings of the study or it differs from previous literature. The study was intended to assess the diabetic risk factors among adults.

The results of the study have been discussed under following section:

Section I: Description of demographic variables of samples.

Section II: Assessment of diabetic risk factors among adults based on IDRS scale.

Section III: Association between risk factors of diabetes mellitus with the selected demographic variables.

Section I: Description of demographic variables at risk non diabetics

The demographic variables selected for the study age, gender, BMI, education qualification, occupation, annual income, personal habits such as dietary habits, alcohol consumption, smoking habit and history of comorbidities.

The distribution of at risk non diabetics according to age revealed that15.33% were within the age group of 30 – 35 years, 49.33% were within the age group of 36 - 49 years and 35.34% were within the age group of 50 – 60 years.

The distribution of at risk non diabetics according to gender revealed that 29% samples were males and 71% subject were females.

The distribution of at risk non diabetics according to BMI revealed that 2% were under weight, 37% were having normal weight, 42% were having over weight and 19 % had obesity.

Education status of at risk non diabetics revealed that 2% were illiterate, 35.33% were having secondary education, 18% were having higher secondary education and 44.66% were having graduate / post graduate.

The distribution of at risk non diabetics according to occupation revealed that 44% are government / private employee, 11.33% are self employee, 8.7% are skilled labour,

2.7% are farmers and 33.33% are unemployed.

The distribution of at risk non diabetics according to annual income revealed that 26% samples had annual income of 5000- 25000, 25.4% samples with annual income 25001- 50000, 34.6% sample with annual income 50001-100000 and 14 % samples with annual income 100001- 500000.

Dietary pattern of at risk non diabetics revealed that 1.33% samples were vegetarian, 11.34% samples were non vegetarian and 87.33% samples were both vegetarian and non vegetarian.

The distribution of at risk non diabetics according to alcohol habit such as 8.76 % samples were alcoholics and 91.3% samples were non alcoholics.

Smoking habits of at risk non diabetics revealed that 4.67% were smokers and 95.33% were non smokers.

The distribution of at risk non diabetics according to comorbidity revealed that 31% samples had comorbidities and 69% were not having any comorbidities.

Section II: Assessment of diabetic risk factors among adults based on IDRS scale

The IDRS score reveals that 5.33% had low risk for developing diabetes mellitus, 55.34% had moderate risk for diabetes mellitus and 39.33% had high risk for developing diabetes mellitus. The study to assess diabetes risk factors among adults with an aim to develop and validate a simplified Indian Diabetes Risk Score. IDRS used 4 risk factors : age, abdominal obesity, physical activity, family history. The beta co-efficient were modified so as to obtain a maximum possible score of 100.

Section III: Association between risk factors of diabetes mellitus with the selected demographic variables.

The Chi square value 37.41 for diet, 12.97 for age, 6.42 for gender and 70.85 for annual income. Hence hypothesis was accepted. This shows that there was a significant association between factors of diabetes mellitus with the selected demographic variables. But there was no significant association found on BMI, education, occupation, smoking habit, alcohol consumption and comorbidities.

A prospective cohort study to assess incidence of type 2 diabetes mellitus and pre diabetes in Kerala, India. A 10-year prospective cohort study was carried out in two urban wards of central Kerala. The study was conducted in two adjacent Wards of

Venmony Panchayat of Alappuzha District in Kerala State that are semi-urban. Findings are based on the 10-year follow-up data from 869 participants from the cohort. The overall follow-up and response rate of the study was 68.9 and 86.9% respectively. During the follow-up period, 190 people (21.9%) developed T2 DM.

Age >45 years, family history of T2DM, BMI ≥ 25 kg/m2 and presence of central obesity emerged as important risk factors for incident T2DM. This study concluded that high incidence of pre diabetes over diabetes observed in this study shows an epidemic trend of T2DM in Kerala, Indian and co morbidities[33].

Summary

Diabetes has become one of the largest public health problems to date. Decreased physical activity, over nutrition, and nutrition transitions caused by changes in lifestyle contribute to the increasing incidence of chronic metabolic diseases as well as deaths related to them. The shift from under nutrition to over nutrition indicates that chronic diseases of affluence have become a public health problem; hence, sustainable health-related goals have been developed for the prevention of these diseases. Environmental factors and the gut microbes influence metabolism in the human body.

Several studies have proven that lifestyle interventions can effectively deter the progression of diabetes in individuals with impaired glucose tolerance. If the window of prevention is shifted earlier, diabetes may become a fortuitous event. Effective prevention needs high attention from the government and the participation of all citizens. Concrete scientific and reasonable measures also need to be developed by experts and scholars. As prevention is better than cure, awareness is always helpful to reduce the incidence of earlier onset of demand and its associated complications. The objective of these study were to assess the diabetic risk factors among adults and association between risk factors of diabetes mellitus with the selected demographic variables.

Based on the objectives, the following assumption were formulated,

1. Adults may have the risk developing diabetes mellitus.
2. Information booklet may increase the knowledge of adults regarding risk factors of diabetes mellitus and thus improve the health.

The literature reviews were taken from journals, unpublished dissertations, thesis, books and web sources. Quantitative research approach used for the research design. Sample size was 150 and selected using

convenience sampling. The tool was found to be reliable and valid and feasibility of the study was checked by pilot study among 10 subjects.

The tool consisted of two sections:

1. Section A : Demographic variables
2. Section B : Standardized assessment tool, Indian Diabetes Risk Score for assessing the risk factors causing diabetes mellitus.

After obtaining permission from the concerned authorities, pilot study was conducted on 29/11/2021 at MGM Muthoot hospital Kozhencherry. The analysis revealed that the study was feasible.

A cross sectional community based study to assess risk of diabetes among adult population of Raipur city using Indian diabetic risk score. The study was conducted among 640 adult population age group of 25-59 years in Raipur city. Socio demographic information was collected using pretested and predesigned questionnaire. Response rate was 100%. Mean age of the study subjects was 37.82 ± 10.68 years, Body mass index 23.34 ± 3.81 kg/m2, waist circumference 85.66 ± 11.15 cm. As per IDRS scoring study population were classified to be low, medium, and high risk for developing Type 2 diabetes were 34.69%, 47.34%, and 17.97%, respectively. The mean IDRS score is 34.5. The study concluded that IDRS can be used as an effective tool for screening undiagnosed diabetes in the community. More than 50% subjects are at high and medium risk for diabetes among the study population[34].

The findings of the study showed that information booklet was effective in improving the knowledge of at risk non diabetics regarding prevention of diabetes mellitus. The analysis of the association of the demographic variables and IDRS scores using chi-square test revealed that there is a significant association between dietary habits and annual income. This study was helpful for the prevention of diabetes mellitus among adults. The findings of the study showed that information booklet was effective in improving the knowledge of at risk non diabetics regarding prevention of diabetes mellitus. The analysis of the association of the demographic variables and IDRS scores using chi-square test revealed that there is a significant association between age, gender, dietary habits and annual income. This study was helpful for the prevention of diabetes mellitus among adults.

Conclusion

Type 2 diabetes is a serious and common chronic disease resulting from a complex inheritance-environment interaction along with other risk factors such as obesity and sedentary lifestyle. Type 2 diabetes and its complications constitute a major worldwide public health problem, affecting almost all populations in both developed and developing countries with high rates of diabetes-related morbidity and mortality. The core aims are to bring forward the new therapy strategies and cost- effective intervention trials of type 2 diabetes The 1997 WHO report has shown that there is a marked increase, in the number of people affected with diabetes and this trend is scheduled to grow in geometric proportions in the next couple of decade.

Thus the present study concluded that information booklet was found to be effective in prevention of diabetes mellitus among adults.

Nursing Implications

The study findings have several implications in the field of nursing service, nursing education, nursing administration and nursing research

Nursing service

1. Patient empowerment is the focus of diabetes education.
2. Patient education should address behavior change, self-efficacy, and health beliefs.
3. Encourage the patient to pursue life goals and interests, and discourage an undue focus on diabetes.
4. Instruct client to comply with the appointment with the healthcare provider at least twice a year for ongoing evaluation and routine nutrition updates.
5. Remind the patient to participate in recommended health promotion activities and age-appropriate health screenings
6. Encourage participation in support groups with patients who have had diabetes for many years as well for those who are newly diagnosed.

Nursing education

1. Make better decisions about your diabetes.
2. Work with your health care team to get the support you need.

3. Understand how to take care of yourself and learn the skills to: Eat healthy. Be active. Check your blood sugar (glucose).
4. Take your medicine.
5. Restore the balance of fluids, electrolytes and the acid-base balance.
6. Correct/reverse abnormal metabolic functions.
7. Help manage the underlying cause of diabetes and the disease process.
8. Prevent diabetic complications.

Nursing administration

1. The study findings can be used by nursing authorities to organize in service education and orientation programmes in community health centers to update the prevention of diabetes mellitus.
2. Nurse administrators can make plans for awareness programs ensuring the prevention of diabetes mellitus among adults.
3. Distribution of guidelines among community people regarding prevention of diabetes mellitus should be encouraged.
4. Nurse administrators can train and supervise the local health workers regarding prevention of diabetes mellitus in community settings.

Nursing research

1. There is a need for extensive and intensive research in this area so that strategies for educating nurses regarding various aspects of prevention of diabetes mellitus can be promoted.
2. Nurse investigators should make effort to conduct interactive sessions with hospitalized patients regarding various aspects of diabetes mellitus.
3. Investigators can use the methodology as reference material, it provides a venue for further studies in this area.

Limitations

1. The sample size was limited only 150
2. The study was limited only selected hospital Kozhencherry

3. The study was limited to adults age groups of 30 – 60 years

4. The sampling techniques used was purposive sampling which is a non probability sampling technique. So generalization of the study findings may be limited.

5. The study was limited to assess only certain risk factors of diabetes mellitus in accordance to IDRS score and also selected demographic variables.

Recommendations

1. Similar study can be replicated with a larger sample in order to generalize the study findings.
2. Similar study can be conducted with different teaching strategies.
3. Similar study can be carried out among other population and health professionals.
4. Similar study can be conducted by including the assessment of practice of preventive measures of diabetes mellitus.

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APPENDIX – A

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY IN MUTHOOT HEALTH CARE PRIVATE LIMITED, KOZHENCHERRY

MGM MUTHOOT COLLEGE OF NURSING
(An ISO 9001 : 2008 Certified Nursing College)
College Road, Kozhencherry - 689 641

(Approved by Indian Nursing Council & Kerala Nurses & Midwives Concil) | (From 2003 to 2009 : Affiliated to Mahathma Gandhi University, Kottayam)
(From 2010 : Affiliated to Kerala University of Health sciences, Thrissur)

Ref.: CON/MMC/1875/11/21 12.11.2021

To
The Medical Superintendent
Muthoot Healthcare Pvt. Ltd.,
Kozhencherry

Sir,

Sub.: Request for permission to conduct Research Study - reg.:-

"Greetings from MGM Muthoot College of Nursing, Kozhencherry"

This is to seek permission for our 3rd year B.Sc. Nursing students to conduct their research study as part of their curriculum requirement on the following topic:-

"A descriptive study to assess the diabetic risk factors among adults in as selected hospital with a view to prepare an information booklet".

Kindly grant them permission to conduct the study among the adults attending medical departments.

I assure that the student researchers will not disturb the normal functioning of the hospital and they will not cause any inconvenience.

Thanking you,

Yours Sincerely,

12/11/2021

Dr. Kiruba J C
Principal

PROF. DR. KIRUBA J. C.
PRINCIPAL
M.G.M. MUTHOOT COLLEGE OF NURSING
KOZHENCHERRY

Parent Hospital : Muthoot Health Care Private Limited ; An NABH Accredited, NABH *Safe* / Certified and ISO 9001:2008 Certified Hospital
College Road, Kozhencherry, Pathanamthitta (Dist) 689641 - Kerala India.
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APPENDIX -B

LETTER SEEKING EXPERT OPINION AND SUGGESTIONS

FOR THE CONTENT VALIDITY OF THE TOOL

From.,

3rd year BSc Nursing, Kozhencherry, Pathanamthitta. To,

Subject: Request for expert opinion and suggestions and establish content validity of research tool.

Respected Sir/Madam,

We are 3rd year BSc Nursing students of MGM Muthoot College of Nursing, Kozhencherry have selected the following topic for research to be submitted as partial fulfilment of requirement for BSc Nursing programme.

TOPIC: "A descriptive study to assess the risk factors of diabetes mellitus among adults in a selected hospital in Pathanamthitta district with a view to prepare an information booklet."

We request you to go through the items and give your valuable suggestions and opinions to validate the tool. Your suggestions will be extremely helpful for us to refine the research study.

We have attached the details of our study with the research tool.

Thanking you.

Yours sincerely,

3rd year BSc Nursing

Place: Kozhencherry

Date:

Here with we have enclosed;

1. Acceptance form for tool validation.
2. Title of the study, statement of the problem, objective of the study, operational definitions and assumptions.
3. Content validity certificate.
4. Criteria for validation of tool.
5. Tool validating certificate.

APPENDIX – C

ACCEPTANCE FORM FOR TOOL VALIDATION

Name.....

Designation.....

Name of the college/hospital/institution

.....

Statement of acceptance/non-acceptance

I give my acceptance/non-acceptance to validate the tool.

Title of the study:

"A descriptive study to assess the risk factors of diabetes mellitus among adults in a selected hospital in Pathanamthitta district with a view to prepare an information booklet."

Place:

Date:

Signature:

LIST OF EXPERTS FOR CONTENT VALIDATION OF RESEARCH TOOLS AND INFORMATION BOOKLET

1. MRS. SINDHU ABRAHAM

PROFESSOR

HOD OF MEDICAL SURGICAL NURSING

MGM MUTHOOT COLLLEGE OF NURSING

KOZHENCHERRY

2. MRS. ANNA SAMUEL

PROFESSOR

DEPARTMENT OF MEDICAL SURGICAL NURSING

MGM MUTHOOT COLLEGE OF NURSING

KOZHENCHERRY

3. MR. SKARIAH KOSHY

PROFESSOR

HOD OF MENTAL HEALTH NURSING

MGM MUTHHOT COLLEGE OF NURSING

KOZHENCHERRY

4. MRS. SIJI T JOSE ASSOCIATE

PROFESSOR

DEPARTMENT OF CHILD HEALTH NURSING

MGM MUTHOOT COLLEGE OF NURSING

KOZHENCHERRY

5. MRS. ANU M

ASSISTANT PROFESSOR

DEPARTMENT OF MEDICAL SURGICAL NURSING

MGM MUTHOOT COLLEGE OF NURSING

KOZHENCHERRY

6. MR.RIJU SAMUEL

ASSISTANT PROFESSOR

DEPARTMENT OF COMMUNITY HEALTH NURSING

MGM MUTHOOT COLLEGE OF NURSING

KOZHENCHERRY

7. MRS.ASHA LIJO JOHNSON

CHIEF DIETITIAN

MUTHOOT HEALTH CARE PRIVATE LIMITED

KOZHENCHERRY

8. MRS. PREETHY

DIABETIC NURSE

MUTHOOT HEALTH CARE PRIVATE LIMITED

KOZHENCHERRY

APPENDIX- E

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of the sixth group of 3rd year BSc Nursing students of MGM Muthoot College of Nursing, Kozhencherry who had undertaken the study on "A descriptive study to assess the risk factors of diabetes mellitus among adults in a selected hospital in Pathanamthitta district with a view to prepare an information booklet."

Place: Signature of expert:

Date: Designation:

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of the fourth group of 3rd year BSc Nursing students of MGM Muthoot college of nursing, Kozhencherry, who had undertaken the study to assess the risk factors of diabetes mellitus among the adults in a selected hospital in pathanamthitta district with a view to prepare an information booklet.

Place : Kozhencherry

Date : 20/11/2021

Sign of expert

Designation : Professor [Medical – Surgical Nursing]

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of fourth group of third year B.Sc Nursing students of MGM MUTHOOT COLLEGE OF NURSING, KOZHENCHERRY, who had undertaken the descriptive study to assess the risk factors of diabetes among adults in a selected hospital in Pathanamthitta district with a view to prepare an information booklet.

13/11/2021.

Place: Kozhencherry

Date: 13.11.2021.

Sign of expert:

ANNA SAMUEL.

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of fourth group of third year B.Sc Nursi students of MGM MUTHOOT COLLEGE OF NURSING, KOZHENCHERRY, who had undertaken the descriptive study to assess the risk factors of diabetes among adults in a selected hospital in Pathanamthitta district with a view to prepare an information booklet.

Place: KOZHENCHERRY

Date: 10.11.2021

Sign of expert:

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of fourth group of third year B.Sc Nursing students of MGM MUTHOOT COLLEGE OF NURSING, KOZHENCHERRY, who had undertaken the descriptive study to assess the risk factors of diabetes among adults in a selected hospital in Pathanamthitta district with a view to prepare an information booklet.

Place: Kozhencherry

Date: 14-12-21.

Sign of expert: 14/12/21

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of the fourth group of 3rd year BSc Nursing students of MGM Muthoot college of nursing, Kozhencherry, who had undertaken the study to assess the risk factors of diabetes mellitus among the adults in a selected hospital in pathanamthitta district with a view to prepare an information booklet.

Sign of expert

Place : Kozhencherry

Date : 23-11-2021

Designation : Assistant Professor

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of the fourth group of 3rd year BSc Nursing students of MGM Muthoot college of nursing, Kozhencherry, who had undertaken the study to assess the risk factors of diabetes mellitus among the adults in a selected hospital in pathanamthitta district with a view to prepare an information booklet.

Place : Kozhencherry

Date : 23-11-2021

Sign of expert

Designation : ASSISTANT PROFESSOR

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of the fourth group of 3rd year BSc Nursing students of MGM Muthoot college of nursing, Kozhencherry, who had undertaken the descriptive study to assess the risk factors of diabetes mellitus among the adults in a selected hospital in pathanamthitta district with a view to prepare an information booklet.

Sign of expert

Place : KOZHENCHERRY

Date : 23.11.2021

Designation : DIETITIAN

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated tool of the fourth group of 3rd year BSc Nursing students of MGM Muthoot college of nursing, Kozhencherry, who had undertaken the descriptive study to assess the risk factors of diabetes mellitus among the adults in a selected hospital in pathanamthitta district with a view to prepare an information booklet.

Place : Kozhencherry

Date : 20/11/2021

Sign of expert

Designation : DIABETIC NURSE

APPENDIX-F

WRITTEN INFORMED CONSENT FORM

I am giving consent to the part of the study by 3rd year BSc Nursing students of MGM MCON Kozhencherry, on the assessment of risk factors of diabetes mellitus among adults with a view to prepare an information booklet. I hereby declare to abide this rules. I have been informed that my participation is entirely voluntary and I can refuse to answer to the questions or decide. To terminate the participation at any point even after the study begins, I have been informed that my participation, nonparticipation or my refusal to participate will have

no effect on the health services provided to me. I have been told that this will be used only for study purpose and also informed about the confidentiality of my responses.

I..... .

.....

.....(name and address) voluntarily agree to join this study.

Full name and signature

Left hand thumb impression

Full name and signature of investigator

Place : Date :

APPENDIX-G CERTIFICATE FOR EDITING

This is certificate that the thesis work **"A DESCRIPTIVE STUDY TO ASSESS THE RISK FACTORS OF DIABETES MELLITUS AMONG ADULTS IN A SELECTED HOSPITAL IN PATHANAMTHITTA DISTRICT WITH A VIEW TO PREPARE AN INFORMATION BOOKLET."** done by III YEAR B.Sc. Nursing students in MGM Muthoot College of Nursing has been edited for English language and the information booklet for Malayalam language appropriateness.

Date: Signature:

Place: Name:

APPENDIX –H

TOOL

DESCRIPTION OF TOOL

A research instrument or tool is a device used to measure the concept of interest in a research project that a researcher uses to collect data. Indian Diabetes Risk

[IDRS] , a standardized tool, is used in the present study. It was developed using four simple parameters namely age, abdominal obesity, family history of diabetes, and physical activity with total score as 100.

Section A

Instrument to assess the risk factors of diabetes mellitus consist of age, gender, anthropometric measurement, educational qualification, occupation, annual income, personal habits.

Section B

Standardized assessment tool like Indian Diabetes Risk Score (IDRS), a simple screening tool for prediction of undiagnosed diabetes.

General instruction to the sample:

1. Put tick mark (✓) for appropriate response.
2. Read slowly and carefully all the questions.
3. Do not give more than one answer for a question.
4. Respond to all the questions.
5. Your response will be kept confidential and use only for the research purpose.

Section A

1. Age in years

a) 30-35 ☐

b) 36-49 ☐

c) 50-60 ☐

2. Gender

a) Male ☐

b) Female ☐

3. Anthropometric measurement:

a)Height ------ cm

b) Weight ---- kg

WHO Classification of weight status

Weight status	Body mass index (BMI),kg/m^2	Remarks
underweight	<18.5	
Normal range	18.5 – 24.9	
Overweight	25.0 – 29.9	
Obese	≥30	
i. Obese class 1	30.0 -34. 5	
ii. Obese class 2	35.0– 39.9	

iii. Obese class 3	≥ 40	

1. Education qualification:

a) Illiterate ☐

b) Secondary education ☐

c) Higher secondary education ☐

d) Graduate / Post graduate ☐

2. Occupation:

a) Government / private employee ☐

b) Self employee ☐

c) Skilled labour ☐

d) Farmer ☐

e) Unemployed ☐

3. Annual income in rupees:

a) 5000 -25,000 ☐

b) 25,001 -50,000 ☐

c) 50,001-1,00000 ☐

d) 1, 00,001 – 5, 00,000 ☐

4. Personal habits

i. Dietary pattern :

a) Vegetarian ☐

b) non vegetarian ☐

c) both ☐

ii. Alcohol consumption:

a) Yes ☐

b) No ☐

iii. Smoking habit:

a) Yes ☐

b) No ☐

iv. Do you have any history of comorbidities?

a) yes ☐

b) no ☐

Section B

Standardized assessment tool, Indian Diabetes Risk Score for assessing the risk factors causing diabetes mellitus.

2. INDIAN DIABETIC RISK SCORE

Categorized risk factors	Score
Age (in year)	
<35	0
35-49	20
>50	30
Abdominal obesity	
Waist circumference female <80 cm, Male <90 cm(Reference)	0
Female 80-89 cm, Male 90-99 cm	10
Female>90 cm, Male>100 cm	20
Physical Activity	
Vigorous exercise or strenuous at work	0
Moderate exercise at work/home	10
Mild exercise at work/home	20
No exercise and sedentary at work/home	30
Family History	
Two non diabetic parents	0

Either parent diabetic	10
Both parent diabetic	20
Total	100

Subjects with IDRS of <30 was categorized as low risk, 30-50 as medium risk and >60 as high risk for diabetes.

APPENDIX I

INFORMATION BOOKLET – MALAYALAM

പ്രമേഹം

ഡയബറ്റിസ് മെലിറ്റസ് അഥവാ പ്രമേഹം ആഗ്നേയഗ്രന്ഥിയിലുണ്ടാകുന്ന (പാൻക്രിയാസ്) രോഗമാണ്.

കാരണങ്ങൾ

- പാൻക്രിയാസിലെ ബീറ്റ കോശങ്ങളുടെ തകരാർ മൂലം ഇൻസുലിൻ ഉത്പാദനം കുറയുക.
- ശരീരം ഇൻസുലിനോട് പ്രതികരിക്കാതിരിക്കുന്ന അവസ്ഥ.
- വ്യായാമക്കുറവ്
- അമിതവണ്ണം
- മാനസിക സമ്മർദ്ദം
- പാൻക്രിയാസിനെ ബാധിക്കുന്ന അസുഖങ്ങളും ശസ്ത്രക്രിയകളും.
- അണുബാധകൾ
- മരുന്നുകളുടെ ദീർഘകാല ഉപയോഗം.
- പാരമ്പര്യം (മാതാപിതാക്കളോ സഹോദരങ്ങളിൽ ആരെങ്കിലുമോ രോഗ ബാധിതരാണെങ്കിൽ).
- ഭക്ഷണത്തിനു മുൻപായി നടത്തുന്ന രക്തപരിശോധനയിൽ ഗ്ളൂക്കോസിന്റെ അളവ് കൂടുതലായി കണ്ടെത്തിയിട്ടുള്ളവരിൽ.
- രക്ത സമ്മർദ്ദം (140/90mmHg)യിൽ കൂടുതൽ
- HDL കൊളെസ്ട്രോളിന്റെ അളവ് കുറവാണെങ്കിൽ (35mg/dl)
- ഗർഭാവസ്ഥയിൽ പ്രമേഹം ഉണ്ടായിട്ടുള്ളവരിൽ.

വിവിധതരം പ്രമേഹങ്ങൾ

- പ്രമേഹത്തെ പ്രധാനമായും നാലായി തരംതിരിക്കാം.
- ടൈപ്പ് - 1 പ്രമേഹം
- ടൈപ്പ് - 2 പ്രമേഹം
- ഗർഭാവസ്ഥയിലെ പ്രമേഹം
- മറ്റ് അസുഖങ്ങളുടെ ഭാഗമായുണ്ടാകുന്ന പ്രമേഹം.

ടൈപ്പ് 1 പ്രമേഹം

- ടൈപ് 1 പ്രമേഹത്തിൽ, ശരീരത്തിൽ ഇൻസുലിൻ കുറഞ്ഞ അളവിൽ ഉണ്ടാകുകയോ തീരെ ഉണ്ടാകാതിരിക്കുകയോ ചെയ്യുന്നു. ഈ രീതിയിലുള്ള പ്രമേഹമുള്ളവർ ഇൻസുലിൻ കുത്തിവയ്പ് എടുക്കണം. സാധാരണമായി യുവത്വത്തിലാണ് ഇത് തുടങ്ങുന്നതെങ്കിലും ഏത് പ്രായത്തിലും സാധ്യതയുമുണ്ട്.

ടൈപ് 2 പ്രമേഹം

- ടൈപ് 2 പ്രമേഹത്തിൽ ശരീരം ഇൻസുലിൻ നിർമ്മിക്കുണ്ടായിരിക്കും. പക്ഷേ വേണ്ടത്ര ഉപയോഗപ്പെടുത്തുവൻ കഴിയാതെ വരുന്നു. ചെറുപ്പത്തിൽ പ്രമേഹം ഉണ്ടാകാമെങ്കിലും മിക്കവാറും 40 വയസ്സിൽ കൂടുതൽ പ്രായമാകുമ്പോഴാണ് ഇത് ആരംഭിക്കുന്നത്.

പ്രമേഹത്തിന്റെ പ്രാരംഭാവസ്ഥ

രക്തത്തിലെ ഗ്ലൂക്കോസിന്റെ അളവ് ഭക്ഷണം കഴിക്കാതെ പരിശോധിക്കുമ്പോൾ കൂടുതലായി കാണപ്പെടുകയും എന്നാൽ പ്രമേഹം സ്ഥിരീകരിക്കത്തക്ക വിധമുള്ള അളവിനേക്കാൾ കുറഞ്ഞുനിൽക്കുകയും ചെയ്യുകയാണെങ്കിൽ നിങ്ങൾക്ക് പ്രമേഹത്തിനുള്ള സാധ്യത സംശയിക്കാം. ഒരു പക്ഷേ നിങ്ങൾ പ്രമേഹത്തിന്റെ പ്രാരംഭവസ്ഥയിലായിരിക്കാം. ഇങ്ങനെ ഉള്ളവരിൽ ഗ്ലൂക്കോസിന്റെ അളവ് 100 - 126 mg/dl ആയിരിക്കും.

രോഗലക്ഷണങ്ങൾ

- സാധാരണയിൽ കവിഞ്ഞുള്ള ദാഹം
- കൂടെകൂടെ മൂത്രമൊഴിക്കുക
- അമിതവിശപ്പ്
- കാരണമില്ലാതെ തൂക്കം കുറയുക
- കാഴ്ചയിൽ വ്യതിയാനം
- തളർച്ച, ക്ഷീണം
- തലവേദന
- കൈകാലുകളുടെ തരിപ്പ്
- തൊലി വരളുക, ചൊറിച്ചിൽ അനുഭവപ്പെടുക
- ഇടയ്ക്കിടെ അണുബാധയുണ്ടാകുക
- മുറിവുകൾ ഉണങ്ങാൻ വൈകുക.

അപകടഘടകങ്ങൾ

- **കുടുംബപാരമ്പര്യം**

മാതാപിതാക്കൾക്കോ സഹോദരങ്ങൾക്കോ പ്രമേഹം ഉണ്ടെങ്കിൽ തലമുറയ്ക്ക് വരാൻ ഉള്ള സാധ്യത കൂടുതലാണ്.

- **അമിതഭാരം**

അമിതഭാരം ഉള്ളവർക്ക് BMI >30kg/m വരാനുള്ള സാധ്യത കൂടുതലാണ്.

- **വംശീയത**

തെക്ക് കിഴക്കൻ ഏഷ്യക്കാർ, ആഫ്രിക്കൻ അമേരിക്കക്കാർ, ഹിസ്പാനിക് അമേരിക്കക്കാർ, അമേരിക്കൻ സ്വദേശികൾ, പസഫിക്ക് ദ്വീപുകാർ ഇവരിൽ വരാനുള്ള സാധ്യത കൂടുതലാണ്.

- **പ്രായം**

നാൽപത്തി അഞ്ചോ (45)അതിൽ കൂടുതലോ പ്രായം ഉള്ളവരിൽ വരാനുള്ള സാധ്യത കൂടുതൽ ആണ്.

- **രക്തസമ്മർദ്ദം**

>140mm / Hg രക്തസമ്മർദ്ദം ഉള്ളവരിലും പ്രമേഹരോഗം വരാൻ ഉള്ള സാധ്യത കൂടുതലാണ്.

- **HDLകൊളെസ്ട്രോൾ**

HDL കൊളെസ്ട്രോളീന്റെ അളവ് <35mg/dl ആകുന്നതും, ട്രൈ ഗ്ലിസറിഡിന്റെ അളവ് >250mg/dl ആകുന്നതും പ്രമേഹം വരാനുള്ള അപകട കാരണത്തിൽ ഒരുപാട് കാരണം ആണ്.

- **ഗർഭകാലത്ത്ഉണ്ടാകുന്നപ്രമേഹം**

ഗർഭകാലത്തിൽ കുഞ്ഞിന്റെ ഭാരം 4 kg ൽ കൂടുതലാണെങ്കിൽ പ്രമേഹം വരുവാനുള്ള സാധ്യത കൂടുതലാണ്.

രോഗനിർണയമാർഗങ്ങൾ

രക്തത്തിലെ ഗ്ലൂക്കോസിന്റെ അളവ്:

- ഭക്ഷണത്തിനു മുൻപ് 110 mg ൽ കൂടുതൽ ആണെങ്കിൽ
- ഭക്ഷണം കഴിച്ച് 2 മണിക്കൂറിനുശേഷം 160 mg/dl ൽ കൂടുതൽ ആണെങ്കിൽ
- HbA1c 4-5.6 ശതമാനത്തിൽ കൂടുതൽ ആണെങ്കിൽ

ചികിത്സാമാർഗ്ഗങ്ങൾ

ചികിത്സാമാർഗ്ഗങ്ങൾ എപ്പോഴും ഗ്ലൂക്കോസിന്റെ അളവ് സാധാരണ ഗതിയിൽ ആക്കാനും അളവിൽ കുറഞ്ഞു പോകാതിരിക്കാനും ആണ് ശ്രദ്ധിക്കുന്നത്. മരുന്നുകൾ അഥവാ ഇൻസുലിൻ ഉപയോഗിക്കുന്നതോടൊപ്പം ഉചിതമായ ഭക്ഷണക്രമീകരണം, വ്യായാമം, ശരീരഭാരം കുറയ്ക്കൽ തുടങ്ങിയവയും അഭികാമ്യമാണ്.

പ്രമേഹസങ്കീർണതകൾ

- രക്തത്തിലെ ഗ്ലൂക്കോസ് അളവ് ക്രമാതീതമായി കുറയുക (ഹൈപ്പോഗ്ലൈസീമിയ)
- ഡയബറ്റിക്ക് കീറ്റോ അസിഡോസിസ്
- ഹൃദയരോഗങ്ങൾ
- പക്ഷാഘാതം
- ഡയബറ്റിക് റെറ്റിനോപ്പതി
- ഡയബറ്റിക് ന്യൂറോപ്പതി
- വൃക്കരോഗം
- പാദവ്രണങ്ങൾ

പ്രമേഹം എങ്ങനെ തടയാം

ഡോക്ടറെ കാണേണ്ടത് എപ്പോൾ

- പ്രായം 35 വയസ്സിൽ കൂടുതലും അമിതവണ്ണവും ഉണ്ടെങ്കിൽ

- 35 വയസ്സ് കഴിഞ്ഞ വ്യക്തിയാണെങ്കിൽ മൂന്നുവർഷത്തിലൊരിക്കൽ പ്രമേഹം ഉണ്ടോ ഇല്ലയോ എന്ന് ഉറപ്പുവരുത്തേണ്ടത് ആകുന്നു.
- ടൈപ്പ് 2 പ്രമേഹം പ്രധാനമായും മൂന്ന് രീതിയിൽ തടയാം

1. ആരോഗ്യകരമായ ജീവിതചര്യ
2. ഉചിതമായആഹാരക്രമം
3. ആരോഗ്യകരമായമാനസികാവസ്ഥ

1. ആരോഗ്യകരമായ ജീവിതചര്യ

ശരിയായ വ്യായാമം

വ്യായാമം ഇല്ലായ്മ പ്രമേഹം എന്ന രോഗത്തെ ത്വരിതപ്പെടുത്തുന്നു. ശരിയായ വ്യായാമം ചെയ്യുന്നത് മൂലം പേശികളുടെ ബലം വർദ്ധിക്കുകയും തന്മൂലം രക്തത്തിലെ ഗ്ലൂക്കോസിന്റെഅളവ് ശരിയായ രീതിയിൽ ക്രമീകരിക്കുകയും ചെയ്യുന്നു.

ഒരു ദിവസത്തിൽ കുറഞ്ഞത് 30 മിനിറ്റ് അഥവാ ഒരാഴ്ചയിൽ കുറഞ്ഞത് 2½ മണിക്കൂർ തുടർച്ചയായ വ്യായാമം ചെയ്യുന്നതിനെ ശരിയായ വ്യയായമരീതി എന്ന് പറയാം.ഇതു നിങ്ങളുടെ അമിത ഭാരത്തെ കുറയ്ക്കുന്നതിനും, ശരീരം ശരിയായ രീതിയിൽ ഇൻസുലിനോട് പ്രതികരിക്കുന്നതിനും സഹായകരമാണ്. പ്രമേഹത്തിന്റെഅപകട സാധ്യത കുറയ്ക്കുന്നതിനോടൊപ്പം രക്തത്തിലെ കൊഴുപ്പിന്റെ അളവ് കുറച്ച് ഹൃദയാഘാതം, പക്ഷാഘാതം തുടങ്ങവിയ അസുഖങ്ങളെ പരോക്ഷമായി തടയുകയും ചെയ്യുന്നു.

അമിതഭാരംകുറയ്ക്കുക

അമിതഭാരം പ്രമേഹത്തിനുള്ള തുറന്ന വാതിൽ ആണ്. നിങ്ങളുടെ ഭാരം അമിതമായി കണക്കാക്കപ്പെടുന്നു എങ്കിൽ അതിനർത്ഥം ആരോഗ്യവാനായ ഒരു മനുഷ്യനേക്കാൾ പ്രമേഹത്തിനുള്ള സാധ്യത നിങ്ങൾക്ക് ഏഴിരട്ടി കൂടുതലാണെന്നാണ്. ആരോഗ്യകരമായ ഭക്ഷണരീതി, ശരിയായ വ്യായാമം എന്നിവ നിങ്ങളുടെ ശരീരഭാരം നിയന്ത്രിക്കുന്നതിൽ നിർണായകമായ പങ്കുവഹിക്കുന്നു.

കൗമാരക്കാരിലെഅമിതവണ്ണം

കുട്ടികളുടെ അമിതവണ്ണം ഒരു കുഴയ്ക്കുന്ന പ്രശ്നമാണ്. സാധാരണയായി ശരീരത്തിന് ആവശ്യമായതിൽ കൂടുതൽ അഥവാ അമിതമായ അളവിൽ ഭക്ഷണമോ ഊർജ്ജപാനീയങ്ങളോ കഴിക്കുന്നത് മൂലമാണ് അമിതവണ്ണം ഉണ്ടാകുന്നത്.

ഉദാസീനമായ ജീവിതശൈലി ഉപേക്ഷിക്കുക

ടെലിവിഷന്റെ മുൻപിൽ നിങ്ങൾ ചിലവാക്കുന്ന ഓരോ മണിക്കൂറും പ്രമേഹത്തിനുള്ള സാധ്യത 20 ശതമാനം കൂടുകയാണ്. കൂടാതെ ടെലിവിഷന്റെ മുൻപിലിരുന്ന് നിയന്ത്രണാതീതമായിപലഹാരങ്ങൾകഴിക്കുന്ന പ്രവണത നിങ്ങൾ അറിയാതെ നിങ്ങളെ പ്രമേഹത്തിലേക്ക് തള്ളിവിടുകയാണ്.

പുകവലി ഉപേക്ഷിക്കുക

പുകവലി ശീലമാക്കിയവരിൽ പ്രമേഹത്തിനുള്ള സാധ്യത 50 ശതമാനം കൂടുതലായി കാണപ്പെടുന്നു. പുകവലി ശരീരത്തിന്റെ ഇൻസുലിനോടുള്ള പ്രതികരണശേഷി കുറയ്ക്കുന്നു. തന്മൂലം ശരീരത്തിലെ ഗ്ലൂക്കോസിന്റെ അളവ് കൂടുന്നതിന് കാരണമാകുന്നു.

2. ഉചിതമായ ആഹാരക്രമം

അന്നജവും (കാർബോഹൈഡ്രേറ്റും) പ്രമേഹവും

ഭക്ഷണങ്ങൾ	ഉപയോഗിക്കേണ്ടവ	ഒഴിവാക്കേണ്ടവ
അരി 	മിതമായ രീതിയിൽ ഉപയോഗിക്കാം	
ഗോതമ്പ് 	മിതമായ രീതിയിൽ ഉപയോഗിക്കാം	
ദോശയും കടലക്കറിയും 	ഉപയോഗിക്കാം	
പുട്ടും ചെറുപയർകറിയും 	ഉപയോഗിക്കാം	

ഭക്ഷണങ്ങൾ	ഉപയോഗിക്കേണ്ടവ	ഒഴിവാക്കേണ്ടവ
കോഴി ഇറച്ചി, മുട്ട, മത്സ്യം 	മിതമായി ഉപയോഗിക്കാം	
ചക്കപ്പഴം 	ചക്ക വേവിച്ചത് കഴിക്കാം	ചക്കപ്പഴം ഒഴിവാക്കുക
ചേന 	മിതമായി കഴിക്കാം	
കപ്പ, ഉരുളകിഴങ്ങ്, ചേമ്പ് 		ഒഴിവാക്കുക
ചോറ് 	മിതമായി കഴിക്കാം	
ചപ്പാത്തി 	കഴിക്കാം	

പാലും പാലുത്പന്നങ്ങളും

കൃത്രിമ മധുരം ഉപയോഗിക്കാത്ത പാൽ, സംഭാരം, മോര് എന്നിവ ഉപയോഗിക്കുകയും മിഠായി, പേട, മധുരപലഹാരങ്ങൾ എന്നിവയുടെ ഉപയോഗം കുറയ്ക്കുകയും ചെയ്യുക.

പഴങ്ങളും പച്ചക്കറികളും

ഭക്ഷണങ്ങൾ	ഉപയോഗിക്കേണ്ടവ	ഒഴിവാക്കേണ്ടവ
തണ്ണിമത്തൻ 		ഒഴിവാക്കുക
മുസംബി, മാതളനാരങ്ങ 	കഴിക്കാം	
ആപ്പിൾ, പേരയ്ക്ക, മുന്തിരി, മാങ്ങ 	ഗ്രീൻ ആപ്പിൾ കഴിക്കാം	മറ്റുള്ളവ ഒഴിവാക്കുക
ബീൻസ്, ബ്രക്കോളി, ഇലവർഗ്ഗങ്ങൾ 	കഴിക്കാം	
ബീറ്റ്റൂട്ട് 	മിതമായി കഴിക്കാം	

കൊഴുപ്പ് ഒഴിവാക്കുക.

കുറഞ്ഞ അളവിൽ അന്നജത്തിന്റെയും കൊഴുപ്പിന്റെയും ഉപയോഗം, കൃത്രിമ മധുരത്തിന്റെയും പൂരിത കൊഴുപ്പിന്റെയും ഉപയോഗം ഇവ ഒഴിവാക്കുന്നത്, രക്ത ത്തിലെ ഗ്ലൂക്കോസിന്റെ അളവ് ക്രമീകരിക്കുന്നതിന് സഹായിക്കുന്നു.

ബോഡി മാസ്സ് ഇൻഡക്സ് (ബി. എം. ഐ)

നിങ്ങളുടെ ഉയരത്തിന് അനുസരിച്ചുള്ള ശരീരഭാരത്തിന്റെ അളവിന്റെ സൂചികയാണ് ബോഡിമാസ് ഇൻഡക് സ്. (ബി.എം.ഐ).

ബി. എം. ഐ കണക്കുകൂട്ടുന്ന വിധം

ബി എം ഐ = ഭാരം കിലോഗ്രാമിൽ/ ഉയരം മീറ്ററിൽ

ലോകാരോഗ്യ സംഘടനയുടെ നിർദേശപ്രകാരമുള്ള അമിതഭാരം അഥവാ പൊണ്ണത്തടിയെ ബിഎംഐ അടിസ്ഥാനമാക്കി തരം തിരിക്കുന്ന വിധം.

വിഭാഗം	ബിഎംഐ (കിലോഗ്രാം /മീറ്റർ)
ക്രമമനുസരണം	18.5 - 24.9
നോർമൽ അളവിനേക്കാൾ കുറവ്	<18.5
അമിതഭാരം	25 - 29.9
പൊണ്ണത്തടി	>30

3. ആരോഗ്യകരമായ മാനസിക അവസ്ഥ

അമിത പിരിമുറുക്കം പ്രമേഹത്തിന് കാരണമാകാം. മാനസികസമ്മർദത്തിന്റെ ഭാഗമായി ശരീരത്തിൽ ഉണ്ടാകുന്ന വ്യതിയാനങ്ങൾ രക്തത്തിലെ ഗ്ലൂക്കോസിന്റെ അളവിനെ ദോഷകരമായി ബാധിക്കുന്നു. യോഗ,പ്രാർത്ഥന, ശ്വസന വ്യായാമങ്ങൾ എന്നീ മാർഗങ്ങൾ മാനസിക പിരിമുറുക്കം കുറയ്ക്കാൻ സഹായിക്കുന്നു.

നിഗമനം

പ്രമേഹം ഒരു നിശബ്ദ കൊലയാളി ആണെന്ന് തിരിച്ചറിയുക. അതിനാൽ പ്രമേഹത്തിനെതിരെ ഉള്ള ഒരു ചെറുത്തുനിൽപ്പ് നിങ്ങളുടെ ഹൃദയത്തിൽ നിന്ന് ആവട്ടെ. വ്യായാമം, ശരിയായ ഭക്ഷണക്രമം, വൈദ്യപരിശോധന എന്നീ ജീവിത ശൈലി മാറ്റങ്ങളിലൂടെ പ്രമേഹം എന്ന രോഗത്തെ തടയാൻ കഴിയുന്നതാണ്.

Prepared by :
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IIIrd Year B.Sc Nursing
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Kozhencherry