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ASSESSMENT OF HEALTH RELATED QUALITY OF LIFE IN DIABETES MELLITUS AND ASSOCIATION OF COMPLICATIONS USING EQ-5D SCALE

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ABSTRACT

Introduction: "Diabetes" is a group of metabolic diseases categorized by hyperglycaemia principally from defect in pancreatic phrase, insulin along with or both.[1] **Aim:** AIM of the study is to describe how diabetes and its complications influence the health related quality of life of individuals using the individual EQ-5D dimensions. **Objective:** The objective of the study is to measure the health related quality of life of diabetes mellitus patients and its complications using the Indian version of EQ-5D and examined the relationship between clinical condition and health.

Methodology

- **Study Design**: Observational study
- **Study Period**: 6months
- **Study Site**: Government general hospital, Anantapuramu
- **Sample Size:** During the study period of 6 months the total sample size was 200.
- **Inclusion Criteria:** Diabetes mellitus patients, pregnant women.
- **Exclusion Criteria**: Lactating mothers

Results: In our study out of 200 patients, 123 patients are identified as male patients and 77 patients are female. In 200 sample size 150 patients are suffering with complications. **Discussion:** In this study with diabetic related complications has reduced Health related quality of life. In the present study, it was found that the major complications seen in male and female diabetic patients are stroke, Hypertension, coronary artery disease, chronic kidney disease, cirrhosis of liver. **Conclusion:** In this study of individuals with diabetes and associating complications with EQ-5Dscore. It was found that strong determinants of reduced Health related quality of life were HTN, stroke, CAD, CKD and cirrhosis of liver.

KEYWORDS:

HTN: Hypertension
CAD: Coronary artery disease
CKD: Chronic kidney disease

INTRODUCTION

"Diabetes" is a group of metabolic diseases categorized by hyperglycaemia principally from defect in pancreatic phrase, insulin along with or both.[1]

Classification

Classification of diabetes mellitus is mainly based on its aetiology and clinical presentation. As such there are 4 types of classes of diabetes mellitus;

- Type 1 diabetes
- Type2 diabetes
- Gestational diabetes and other specific types

Type 1 diabetes

This form of Diabetes, which accounts for only 5-10% of those with diabetes, which is called as insulin dependent diabetes or juvenile onset diabetes, results from a cellular mediated autoimmune destruction of the beta cells of the pancreas.

Autoimmune destruction of the beta cells has multiple genetic predispositions and is also related to environmental factors that are still poorly defined.[1]

TYPE 2 DIABETES

This form of diabetes, which accounts for 90-95% of those with diabetes, previously known as non insulin dependent diabetes, or adult onset diabetes, encompasses individuals who have insulin resistance and usually have relative insulin deficiency. There are many different causes of this form of diabetes.[1]

ETIOLOGY

The Words "DIABETES" and" MELLITUS" are derived from the Greek.

Diabetes indicates": a passer through, a siphon" where Mellitus indicates "sweet". It is thought that the Greeks named it so due to excessive urine produced by diabetics attracted flies and bees. The way of diagnosing diabetes mellitus patients traditionally in ancient times was by observing whether the ants are attracted to persons urine or not.[2]

SYMPTOMS

Some of the signs and symptoms of type 1 and type2 diabetes are:

- Increased thirst
- Frequent urination
- Extreme hunger
- Unexplained weight loss
- Presence of ketones in the urine

CAUSES

In type 2 diabetes the cells become resistant to the action of insulin and pancreas is unable to make enough insulin to overcome the resistance. Instead of moving into your cells where it's needed for energy sugar builds up in the blood stream.

Diagnosis

Symptoms of type 1 diabetes often appear suddenly and are often the reason for checking blood sugar levels.

Anyone older than age 45: Is advised to receive an initial blood sugar screening and then if the results are normal to be screened every three years thereafter.

Any woman who has had gestational diabetes is advised to be screened for diabetes every three years.

Tests for type 1 and type 2 diabetes and pre diabetes

Glycated haemoglobin (A1C)

This blood test which does not require fasting indicates your average blood sugar level for the past 2 to 3 months. It measures the percentage of blood sugar attached to haemoglobin the oxygen carrying protein in red blood cells.

The higher your blood sugar levels, the more haemoglobin you will have with sugar attached.

Random blood sugar test: A blood sample will be taken at a random time. Regardless of when you last ate a random blood sugar level of 200 mg/dl.

Fasting blood sugar test

A blood sample will be taken after an overnight fast. A fasting blood sugar level less than 100mg/dl is normal.

Oral glucose tolerance test

For this test, you fast overnight and the fasting blood sugar levels is measured. Then you drink a sugary liquid and blood sugar levels are tested periodically for the next two hours. A blood sugar level less than 140 mg/dl is normal.[1]

TREATMENT

The major goal is treating type 1 and type 2 diabetes is to control blood sugar (glucose) levels within the normal range.

Medications for type 2 diabetes are designed to

Increase insulin output by the pancreas.

Decrease the amount of glucose released from the liver.
Increase the sensitivity (response) of cells to insulin.

Each diabetes plan must be balanced with the intake of insulin and other diabetes medications. Consumption of various foods in healthy diet includes fruits and non fat dairy products, beans, fish.

Meal timing and amount of insulin administration are considerations when planning a diet for people with type 1 diabetes.

TREATMENT

Metformin

Metformin is a biguanide drug that increases the sensitivity of the body cells to insulin. It also decreases the amount of glucose produced by the liver. In 1994, the FDA approved the use of the biguanide called metformin for the treatment of type 2 diabetes. Today this is still typically the first drug prescribed for type 2 diabetes.[3]

Sulfonylurea

Medication that increases insulin output by the pancreas belongs to the class of drugs called sulfonylureas.

The newer sulfonylurea's drugs include Glyburide, glipizide, glimepiride.[3]

Meglitinides

Like sulfonylureas, meglitinides are a class of drugs that work by promoting insulin secretion from the pancreas. Unlike the sulfonylureas which last longer in the body, repaglinide and nateglinide are very short acting with peak effects within one hour.[3]

Thiazolidinediones

Thiazolidinedione drugs lower blood glucose by increasing the sensitivity of the cells to insulin .examples includes pioglitazone and rosiglitazone.

These drugs have been linked to serious side effects like an increased risk of heart failure.

Alpha glycosidase inhibitors
Drugs of this class decrease the absorption of carbohydrates from the intestine. Before being absorbed of carbohydrates from the intestine. Before being absorbed into the bloodstream, enzymes in the small intestine must break down carbohydrates into smaller sugar particles, such as glucose.

Treatment of diabetes with Insulin
Insulin remains the mainstay of treatment for patients with type 1 diabetes. Insulin is also important therapy for type 2 diabetes when blood glucose levels cannot be controlled by diet, weight loss, and exercise and oral medications.

INSULIN
A hormone produced in the pancreas by the islets of Langerhans, which regulates the amount of glucose in the blood. The lack of insulin, causes a form of diabetes.[4]

THE EUROQOL GROUP
The EUROQOL group is a network of international multi disciplinary researchers devoted to the measurement of health status .Established in 1987, the EUROQOL group originally consisted of researchers from Europe but now a days also includes members from North and south America, Asia, Australia, Africa and New Zealand. Research areas include: valuation, EQ-5D use in clinical studies and in population surveys, experimentation with the EQ-5D descriptive system, computerized applications, interpretation of EQ-5D scores and index values and the role of EQ-5D in measuring social inequalities self reported health.[5]

EQ -5D
EQ-5D is a standardised measure of health status developed by the EuroQol group in order to provide a simple, generic measure of Health for clinical and economic appraisal.

EQ-5D provides a simple descriptive system and a single value for health status that can be used in clinical and economic evaluation of health care as well as in population health surveys.[5]

EQ-5D-3L
The EQ-5D 3 level version (EQ-5D-3L) was introduced in 1990. The EQ-5D-3L essentially consists of 2 pages - EQ-5D descriptive system (page 2) and the analogue scale (page 3).

The EQ-5D -3 L descriptive systems comprises the following 5 dimensions:
- Mobility
- Self care
- Usual activities
- Pain/discomfort
- Anxiety/depression.

Each dimension has 3 levels:
- No problems
- Some problems
- Extreme problems.

The EQ VAS records the respondents self related health on a vertical visual analogue scale. The EQ-5D was used to measure of respondents health related quality of life and utility values. The EQ-5D provides a simple descriptive profile and single index value for health status.

EQ-5D-3L has been widely used in diabetic populations. patients with diabetes often report lower scores in the visual analogue scale score compared to the general population.[5]

EQ-5D-Y
In 2006, a task force was established within the Euro-Qol group to develop a child friendly version of the EQ-5D. During the development of this version different terminologies were considered.

The EQ-5D –Y consists of 2 pages the EQ-5D-Y descriptive system (page2) and the EQ visual analogue scale (page3). The descriptive system comprises the same 5 dimensions as the EQ-5D-3L, but using a child friendly wording(mobility, looking after myself, doing usual activities, having pain or discomfort, feeling worried, sad or unhappy.[5]

HEALTH STATE
Each of the 5 dimensions comprising the descriptive system is divide into3 levels of perceived problems.
- Level 1: Indicating no problem
- Level 2: Indicating some problems
- Level 3: Indicating a lot of problems[5]

Methods
- Method of collection of data: obtaining the demographic and clinical of the study participants using :
- Euro quality halflife-5Dscore

The questionnaire had questions
- about socio demographic characteristics use of health care diabetic complications and finally the EQ-5D descriptive system.
- The necessary was collected by interviewing the patients using the following annexure-1
- Annexure-1(patient demographic characteristics: details of patient history; self reported complications)
- Annexure-2(EQ-5Dquesstionare form)
- Annexure-1: The annexure was self prepared structure data collection form was used to collect the demographic details of the study participants. it includes
- Name
- Age

- Sex
- Weight
- Social history
- Medical history

Annexure-2: The annexure had EQ-5Dscore. it has 5D(mobility, self care, usual activities, pain/discomfort; anxiety/depression)

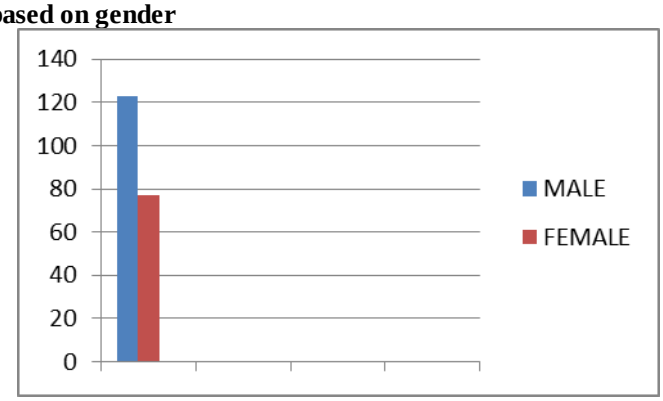
- Each dimension has 3 levels
- Level-1:no problems
- Level-2:some problems
- Level-3:extreme problems

RESULTS

Percentage distribution of patient based on Gender

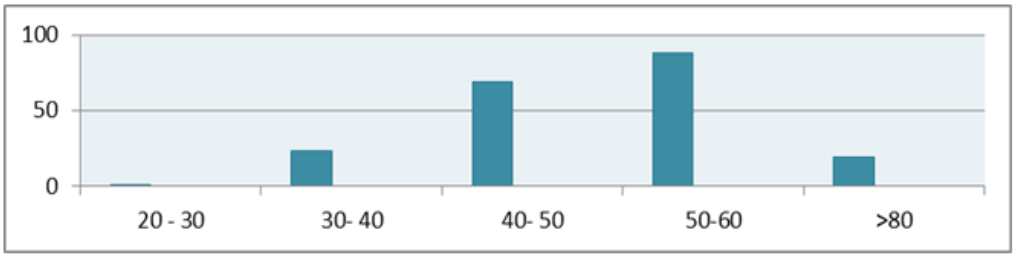
Total number of patients with diabetes mellitus	Number of male patients	Number of female patients
200	123	77

Percentage distribution based on gender



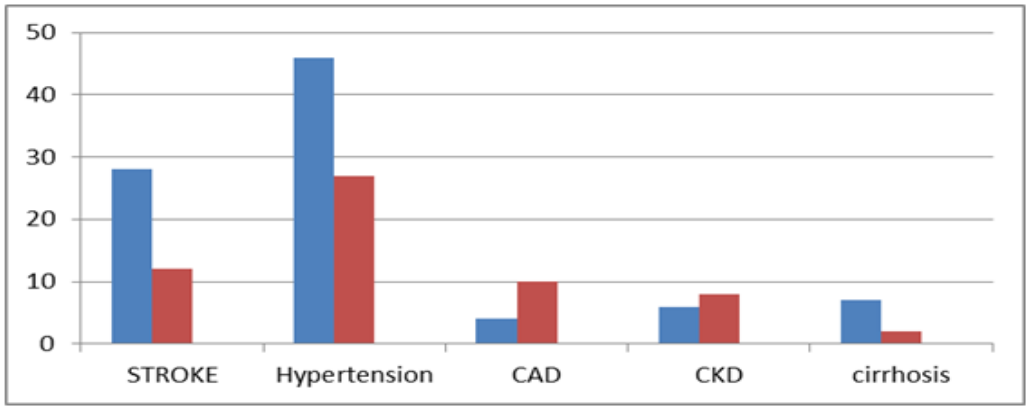
Percentage distribution based on Age group

AGE GROUP	No .of patients(200 patients)
20-30	1
30-40	23
40-50	69
50-60	88
>80	19



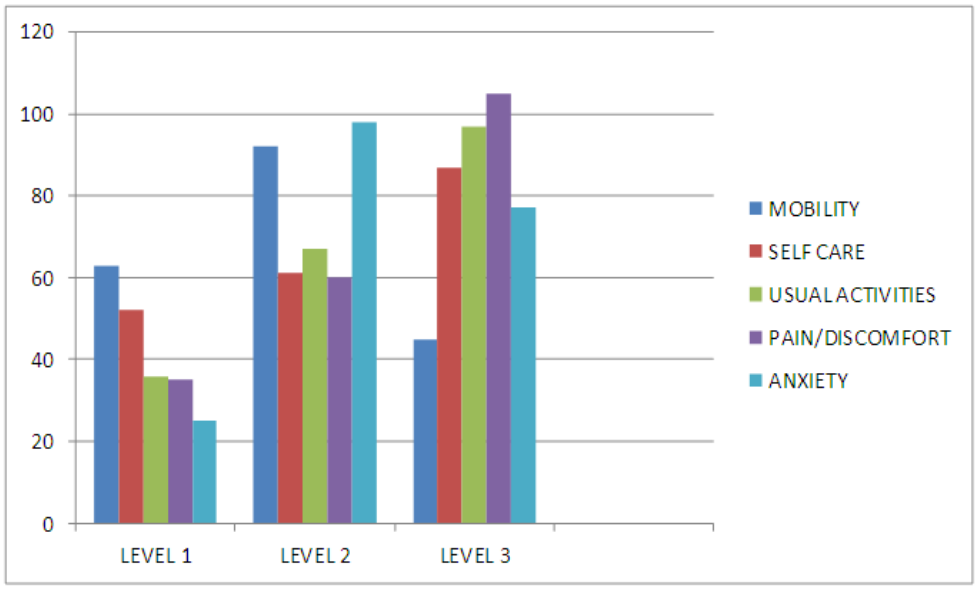
Percentage distribution of patients based on complications

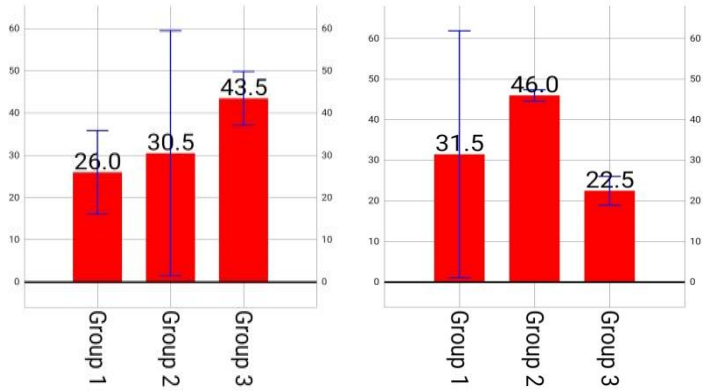
Complications	MALE	FEMALE
Stroke	28	12
Hypertension	46	27
Coronary artery disease	04	10
Chronic kidney disease	06	08
Cirrhosis of liver	07	02



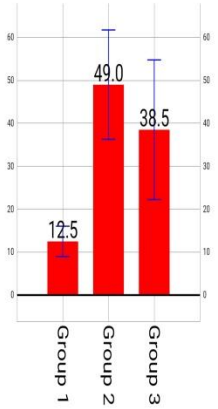
CALCULATION OF EQ-5D SCORE

LEVEL	MOBILITY	SELF CARE	USUAL ACTIVITY	PAIN OR DISCOMFORT	ANXIETY
LEVEL 1	63	52	36	35	25
LEVEL 2	92	61	67	60	98
LEVEL 3	45	87	97	105	77
MEAN	67	67	67	67	67
STANDARD DEVIATION	94	94	94	94	94

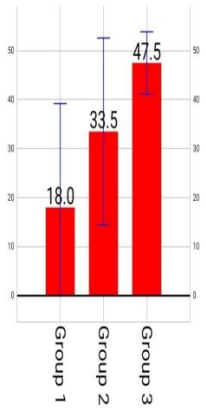




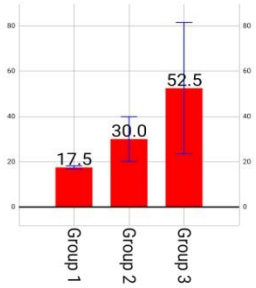
P value for usual activities



P value for pain



P value for Anxiety



DISCUSSION

In this study with diabetic related complications has reduced Health related quality of life.

In the present study, it was found that the major complications seen in male and female diabetic patients are stroke, Hypertension, coronary artery disease, chronic kidney disease, cirrhosis of liver.

Coronary artery disease and cirrhosis of liver are the complications seen less in the study.

More number of complications is seen in age group of 40-50 years followed by hyper tension, stroke.

In the age group of 20-40 years few complications are seen, this showed that age is one of the factors influencing health related quality of life.

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