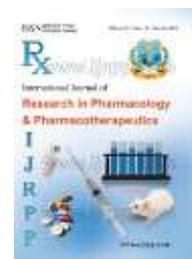




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Research article

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Study on quality of life in patients with diabetes mellitus

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ABSTRACT

Health-related QOL can be measured with generic measures that are intended to be applicable across different diseases. One of the most widely used generic instruments is the 36-item short form of the Medical Outcomes Study questionnaire (SF-36),^[1] which was designed as a generic indicator of health status for use in population surveys and studies of health policy.^[2] It was designed to be applicable to a wide range of conditions, and covers both physical and mental concepts. The study was done in Erode Head Government Hospital. There were 200 patients were selected in this study and the study period was 10 months. For conducted vast literature survey about diabetes we obtained a wide range of information about the disease and other related risk factors. We prepared a questionnaire for to measure QOL. The study concluded that Diabetes Mellitus patients with depression scored lower HRQL and the male patient scored higher Health Related Quality of Life score than female. Diabetes Mellitus duration also may impact on the Quality of Life of diabetic patients.

Keywords: Quality of life, Diabetes mellitus.

INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder resulting from a defect in insulin secretion, insulin action, or both.^[5-6] Insulin deficiency in turn leads to chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism.^[3-6] As the disease progresses tissue or vascular damage ensues leading to severe diabetic complications such as retinopathy,^[7,8] neuropathy,^[9,10] nephropathy,^[13,14] cardiovascular complications^[13,15] and ulceration.^[15,17] Thus, diabetes covers a wide range of heterogeneous diseases. Diabetes is the most common endocrine disorder and by the year 2010, it

is estimated that more than 200 million people worldwide will have DM and 300 million will subsequently have the disease by 2025.^[17-19]

Quality of Life and Diabetes

Quality of life (QOL) is a central issue for patients, providers, and policy makers, and interest in health-related quality of life (HRQOL) has increased markedly in recent years.^[20] QOL is of particular concern to those with chronic disease for which a cure is unlikely.^[21] Persons with chronic disease may be most concerned with function and well-being,

rather than the physiologic measures that providers find useful.^[22] In addition, psychosocial factors can influence health outcomes; self-assessed health status has been shown to be a better predictor of mortality and morbidity than many objective measures of health.^[23] Depression among persons with diabetes is a strong predictor of clinical outcomes, including hospitalization and mortality.^[24] A particularly important aspect of life for persons with diabetes is quality of life. Diabetes affects most every facet of life, including diet, activity, employment, and daily routines. In addition, treatment is complex and often invasive, and there are concerns regarding complications, morbidity, and premature mortality.

HRQOL is a broad term encompassing five categories of concepts: duration of life, impairments, functional states, perceptions, and social opportunities.^[23] These concepts are health-related to the extent that they are influenced by disease, injury, treatment, or policy,^[23] although when a patient is ill or diseased, almost all aspects of life can become health-related.^[22] The terms health status, functional status, well-being, and HRQOL are often used interchangeably.^[24] Although there is no clear consensus on when and where a particular term should be used, distinctions can be made.^[24] Health status encompasses functional status, morbidity, and well-being¹ and is a useful term in the context of assessing health services and treatment effectiveness.^[24] Functional status usually refers to limitations in the performance of social roles or restrictions in activity.^[24] Both health status and functional status typically apply to more objective measures, and do not reflect how the patient's objective status is reflected in their overall well-being. Well-being generally refers to subjective perceptions of global health or health status.

Health-related QOL can be measured with generic measures that are intended to be applicable across different diseases, treatments, or interventions.^[23] These include measures such as the Sickness Impact Profile^[25] and the Nottingham Health Profile,^[26] among many others. One of the most widely used generic instruments is the 36-item short form of the Medical Outcomes Study questionnaire (SF-36),^[27] which was designed as a generic indicator of health status for use in population surveys and studies of health policy.^[28] It was designed to be applicable to a wide range of conditions, and covers

both physical and mental concepts in eight multi-item scales: physical function; role limitations due to physical health problems; bodily pain; social functioning; general mental health (covering psychological distress and well-being); role limitations due to emotional problems; vitality, energy, or fatigue; and general health perceptions.

The advantages of generic measures include the ability to compare health status across populations and interventions,^[23] and generic measures allow QOL determination in persons with more than one condition. However, generic measures may lack sensitivity to characteristics and changes in persons with specific diseases. Testa et al.^[29] reviewed the literature on the relationship between glycemic control and HRQOL and found no relationship when HRQOL was measured with the SF-36. However, differences in HRQOL could be demonstrated with improved glycemic control when scales were used that directly measured feelings of distress associated with symptoms and functioning. These authors concluded that "general measures of QOL may be too crude and insensitive to capture the important gains in health outcomes due to new therapeutic interventions and programs in diabetes".^[29]

AIM

The aim of the study was to assess the quality of life of patients with diabetes mellitus and to determine that clinical and socio demographic factors that affect the quality of life of this patients.

METHODOLOGY

Study was done in Erode Head Government Hospital, Erode. All of the selected patients were from rural area and all of the same shared the similar life styles and physical activities. There were 200 patients were selected in this study and the study period was 10 months. Patients were advised to quit smoking, chewing betel nuts and consuming alcohol during the entire study period. The study was based on some inclusion and exclusion criteria as under:

Inclusions criteria

Both male and female patients had age more than 30 years old and less than 70 years old were included in this study who had known diabetic for more than 3 years.

Exclusion criteria

Patients having complicated and other communicable diseases had not been taken into consideration and patient taking insulin injections, pregnant and nursing mothers were also excluded from this study.

STUDY PROCEDURE

Phase 1

For conducted vast literature survey about diabetes we obtained a wide range of information about the disease and other related risk factors. We prepared a questionnaire for Demographic data. We also select questionnaire for to measure QOL.

Phase-2

We conducted the survey in the hospital data, is collected from the patients regarding different queries designed in the questionnaires. Detailed counseling is giving to the patients regarding various aspects of diabetes.

Phase-3

The data was collected from the patients are analyses, assess and the quality of life in diabetic patients was monitored.

MEASURES

The instruments consisted of a questionnaire on sociodemographic and clinical history questionnaire, health status questionnaire (HSQ-12) and HAM-D^[30] for whom showing depression symptom. All questionnaire are translated Tamil, the mother language spoken in this area. The data are collected on clinical days during seven month period between 20-01-2014 to 01-09-2014.

QUALITY OF LIFE SCORING SYSTEM

The Hospital Anxiety and Depression Scale The HADS is a brief self-report screening scale,

RESULTS AND DISCUSSION

GENDER DISTRIBUTION

A total of 200patients were selected. Out of 200 patients 96(48%) were male and 52(52%) were female.

developed by Zigmond and Snaith (1983)^[31], the scale focuses on the two aspects of psychological health which were considered to have the most relevance, i.e., anxiety and depression.

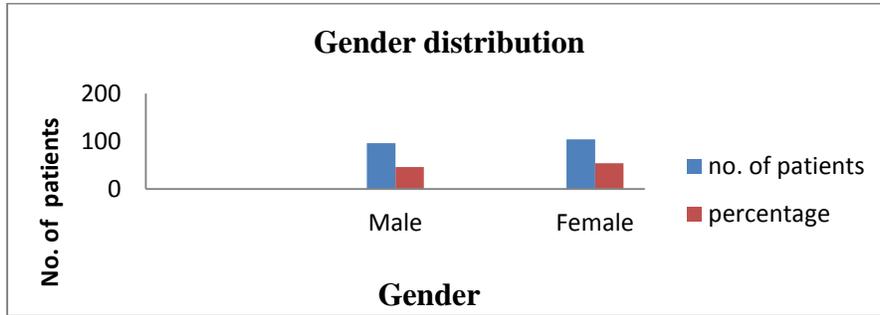
The Health Status Questionnaire 12 (HSQ-12) was developed by the Health Outcome Trust as a generic instrument for the multidimensional evaluation of physical, emotional, and social functioning. This Instrument content was derived from the 39-item Health Status Questionnaire (HSQ, version 2), an extension of the SF-36. The twelve items of the HSQ-12 assess the same eight domains of health status included in the SF-36, namely energy/fatigue €, bodily pain (BP), mental health (MH: three items), physical functioning (PF: three items), perceived health (PH), role limitation-mental (RM), role limitation-physical (RP), and social functioning (SF). The HSQ-12 assesses the impact of health on functioning over the previous four weeks. Categorical response options range from three to six options. An average score is calculated for the two multi-item scales (Mental Health and Physical Health); the recoded response is the score for single items. Scores range from 0 to 100, where 100 is the best possible health.^[32]

1. **Physical health** [physical functioning, physical role and bodily pain]

2. **Mental health** [social functioning, emotional role and mental health] General health and vitality are considered to belong to both components.^[33]

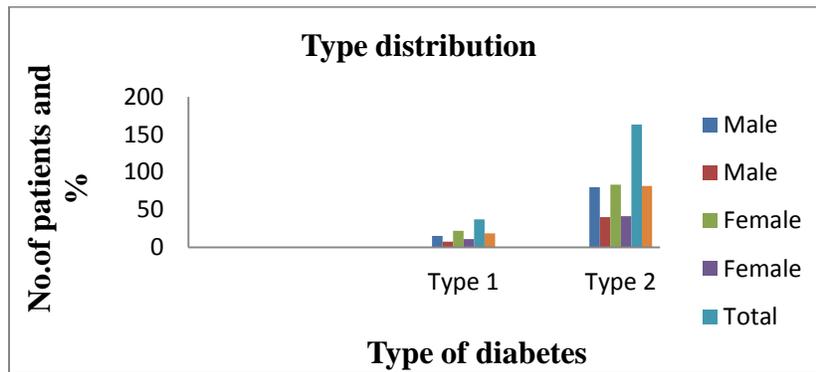
STATISTICAL ANALYSIS

Data were analyzed using Graph Pad Prism Version 6.00 and Microsoft Excel. The results were presented using absolute figures and percentages. Analysis was done by student's paired t test of significance.



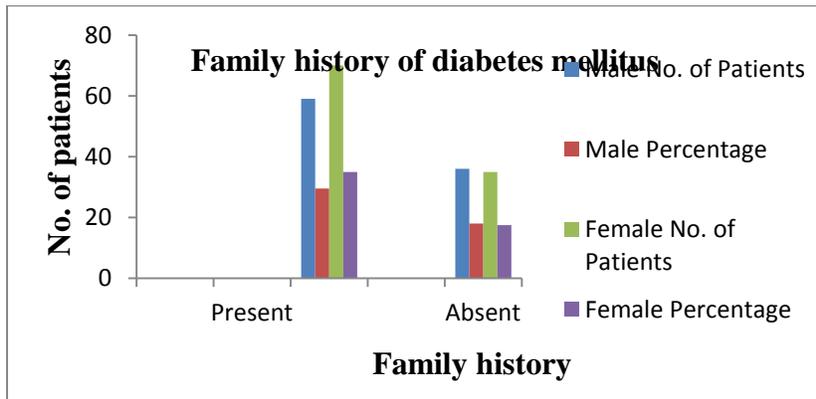
TYPE DISTRIBUTION

Out of 200 patients, 37(18.5%) had type-1 diabetic patient and 163(81.5%) had type2 diabetic patient.



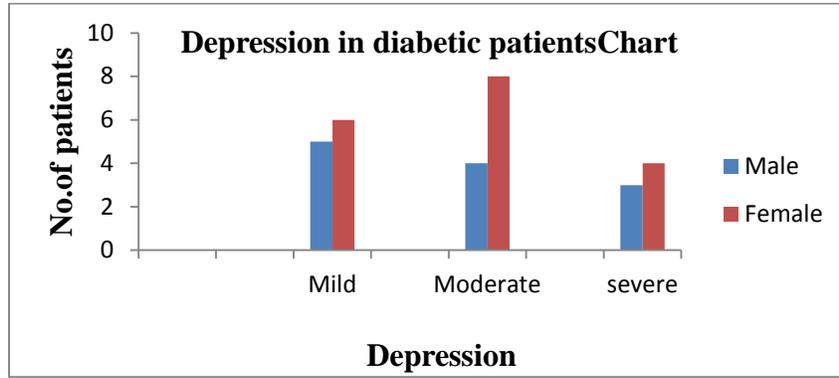
FAMILY HISTORY OF DIABETES MELLITUS

Out of 95 male patients 59(29.5%) and out of 105 female patients 70(35%) were having family history of diabetes.



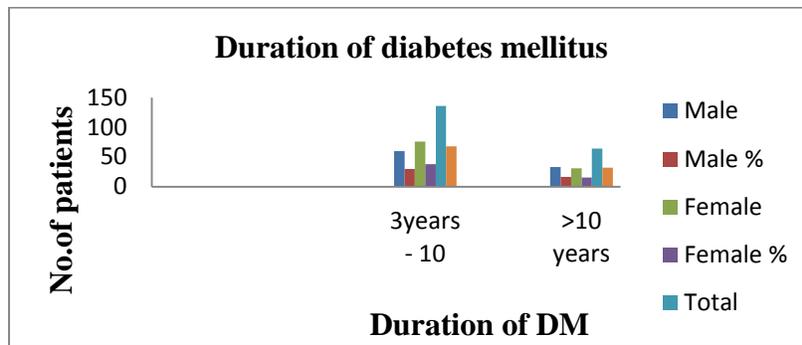
DEPRESSION IN DIABETIC PATIENTS

Out of the 200 patients 30 (15%) had depression. In this 11 patient had mild depression, 12 had moderate and seven had severe depression.



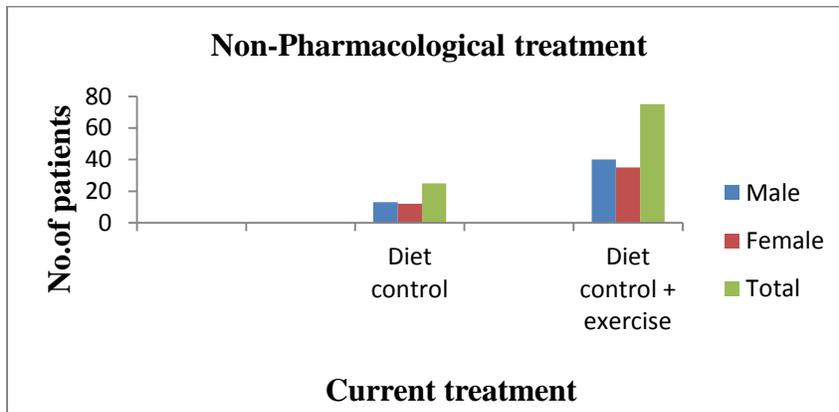
DURATION OF DM

Out of 200 patients, 136 (68%) had 3-10 years of DM duration and 64 (32%) had above 10 years of DM duration.



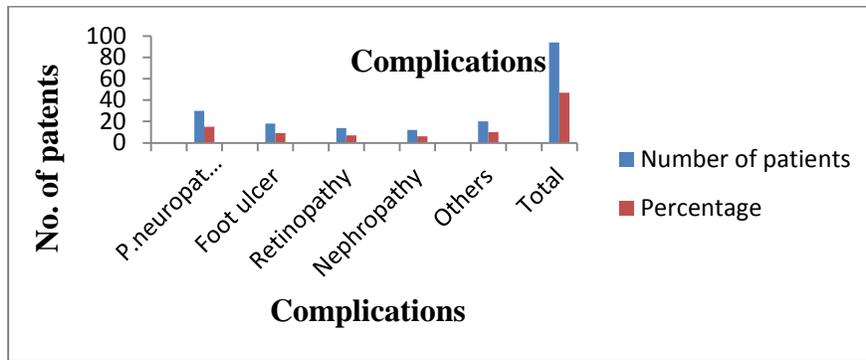
NON-PHARMACOLOGICAL TREATMENT

Out of 96, male patients 13% was in diet control, 40% was in diet with exercise. Of the 104 female patients, 12% was in diet control, 35% was in diet with exercise.



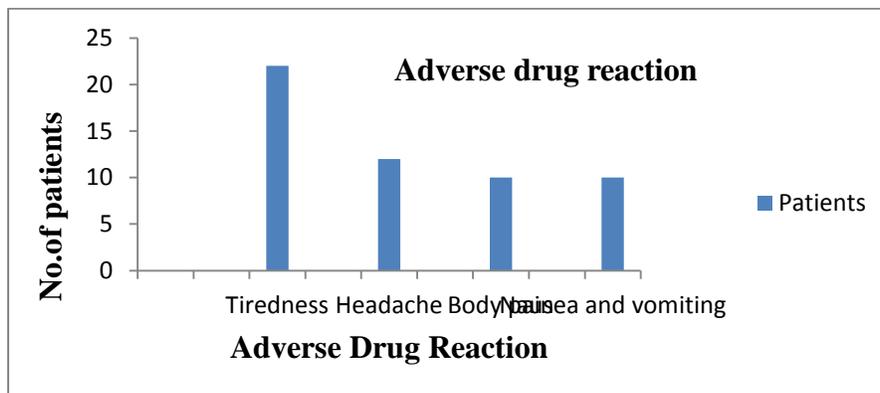
COMPLICATIONS

Out of 200 patients 94(47%) had diabetic complications. There were Peripheral neuropathy (15.0%), Foot ulcer (9%), Retinopathy (7%), Nephropathy (6%), and Others (10%).



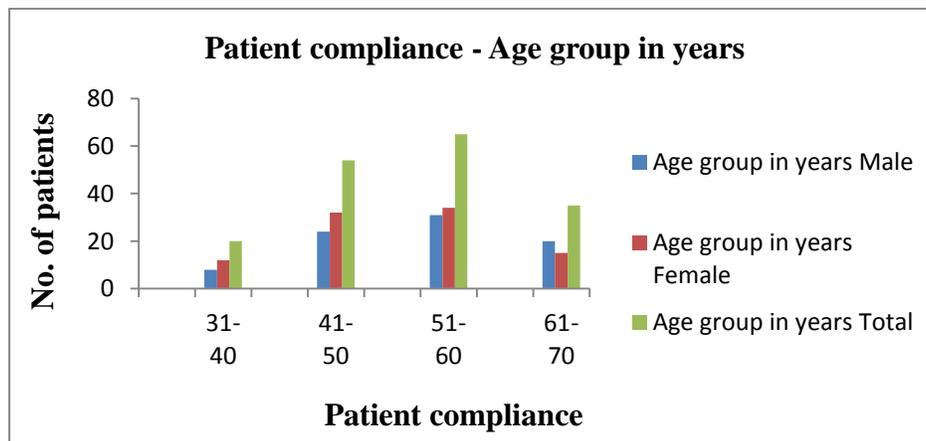
ADVERSE DRUG REACTION

Out of 200 patients 54 had adverse drug reaction. There were Tiredness (22), Headache (12), Body pain (10), Nausea and vomiting (10).



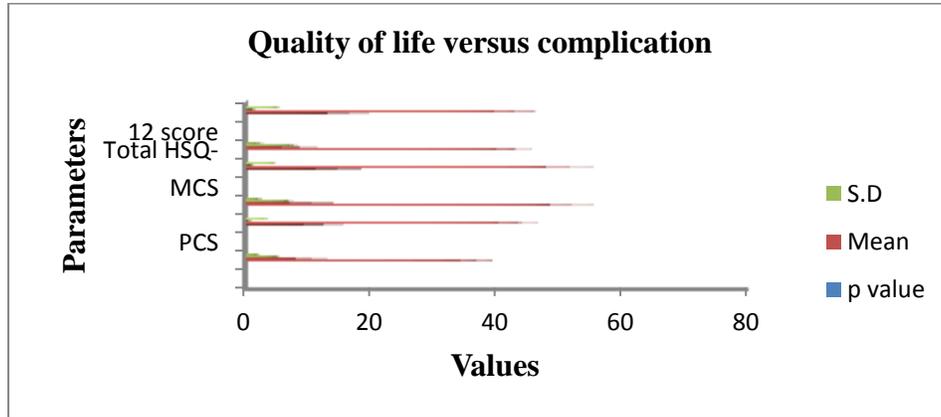
PATIENT COMPLIANCE IN AGE GROUPS

Out of 200 patients 174 were found to be compliance.



QUALITY OF LIFE VERSUS COMPLICATION

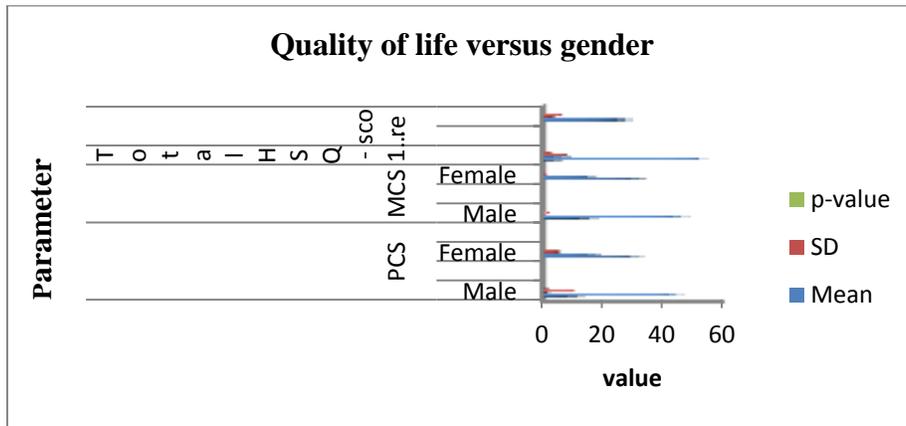
Patients who had diabetic complication scored a significantly lower HRQOL in PCS (0.036), MCS (0.066) and total HSQ-12(0.012) than patients without diabetic complication.



QUALITY OF LIFE VERSUS GENDER

Male patients scored a higher HRQOL than female patients, which was significant. The PCS Scores of male was 49.50+10.50 and female was 43.50+9.50.

The MCS score of male and female were 54.60+1.85 and 43.50+1.75 respectively. The total HSQ-12 score of men was 54.50+9.2 and female was 48.20+8.50.



DISCUSSION

In this study a total of 200 patients were selected. Out of 200 patients 96(46%) were male and 104(54%) were female. The prevalence of diabetes is higher in women than men. The urban population with diabetic patients in developing countries is projected to double between 2000 and 2030. [34] Type 1 diabetes is the common form of diabetes in most part of the world, although reliable data are still unavailable in several countries. Wide variations exist between the incidence rates of different populations. Incidence is lowest in China and Venezuela and highest in Finland and Sardinia. In general, the incidence increases with age, the incidence peak is at puberty. After the pubertal years, the incidence rate significantly drops in young women, but remains

relatively high in young adult males up to the age 29-35 years. [35]

Out of the total patients, there were 20 patients in the age group of 31-40 years, 68 patients were in the age group of 41-50 years, 74 patients were between 51-60 years, and 38 patients were between 61-70 years. In this study, we had 18.50% patients with type-1 diabetes whereas 81.50% patients with type 2 diabetes. Type 2 diabetes is more common than type 1. [36]

Out of 95 male patients 59(29.5%) and out of 105 female patients 70(35%) were having family history of diabetes. Family history of diabetes is one of the reasons for diabetes. [37]

Out of the 200 patients 30 (15%) had depression, of which 11 patient had mild depression, 12 had moderate and 7 had severe depression. Depression is

a serious mental illness which reduces quality of life. Studies show that depression and diabetes may be linked, but scientists do not yet know whether depression increases the risk of diabetes or diabetes increases the risk of depression. Current research suggests that both cases are possible. Diabetes may make symptoms of depression worse. The stress of managing diabetes every day and the effects of diabetes on the brain may contribute to depression. [38, 39, 40]

Overall 94 patients (47%) out of 200 patients had diabetic complications. The Peripheral neuropathy is prevalent in about 15% diabetic patients, foot ulcer is prevalent in about 9% diabetic patients, Retinopathy is prevalent in about 7% diabetic patients, Nephropathy is prevalent in about 6% diabetic patients, while 10% had some of other diabetic complications. There were due to the reason of the chronic complications of diabetes mellitus affect many organ systems and are responsible for the majority of morbidity and mortality. [41]

Out of 96, male patients 13% was in diet control, 40% were in diet control and simultaneously they were doing exercise. Out of the 104 female patients, 12% were in diet control and simultaneously they were doing exercise. Exercise had a significant role in the regulation of blood glucose, improving insulin action, metabolism of proteins and fats, preventing complications of diabetes, improving muscle flexibility and strength, had beneficial effects on the cardiovascular system and it had also increased life expectancy of the patients. In addition, physical activity was beneficial for the mental state of the individual, because it increases the energy of the human body, improves self-esteem and decreases depression. [42 - 45]

QUALITY OF LIFE VERSUS DEPRESSION

Out of 200 patients 24 were suffering from depression. Diabetic patients without depression scored a higher HRQOL than patients with depression, which was significant. [42-45]

QUALITY OF LIFE VERSUS COMPLICATION

In this study out of 200 patients 46.15% were found to have diabetic complications. Patients who had

diabetic complication scored a significantly lower HRQOL than patients without diabetic complication. Diabetes mellitus is the most common cause of various complications such as blindness, a variety of debilitating neuropathies, and cardiac and cerebral disorders. Early in the course of diabetes, intracellular hyperglycemia causes abnormalities in blood flow and increased vascular permeability. This reflects decreased activity of vasodilators such as nitric oxide, increased activity of vasoconstrictors such as angiotensin II and endothelin-1, and elaboration of permeability factors such as vascular endothelial growth factor (VEGF). In diabetic arteries, endothelial dysfunction seems to involve both insulin resistance specific to the phosphatidylinositol-3-OH kinase pathway and hyperglycemia. [46-49]

QUALITY OF LIFE VERSUS DURATION OF DIABETES MELLITUS

Diabetic Patients who had 3-10 years of DM duration scored a significantly higher HRQOL than patients with >10 years of DM duration. So duration of DM may effect on quality of life of diabetic patient. Health-related quality of life is a subjective assessment of health status that includes relevant aspects such as general health, physical, emotional, cognitive, and role functioning, as well as social well-being and functioning. The increasing duration of diabetes mellitus may decrease the quality of life [50].

QUALITY OF LIFE VERSUS GENDER

Male patients scored a higher HRQOL than female patients, which was significant. The PCS Scores of male was 49.50+10.50 and female was 43.50+9.50. The MCS score of male and female were 54.60+1.85 and 43.50+1.75 respectively. The total HSQ-12 score of men was 54.50+9.2 and female was 48.20+8.50. So the male diabetic patients had more QOL than female diabetic patients, Because of women with diabetes have a greater risk than men with diabetes. [51]

CONCLUSION

Diabetes Mellitus patients with depression scored lower HRQL score than without depression. The male patient scored higher Health Related Quality of

Life score than female. Diabetes Mellitus duration also may impact on the Quality of Life of diabetic patients. Diabetes Mellitus patients had chronic

complications such as vascular and nonvascular complications. These patients with complication had lower HRQL score than non-complicated patients.

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