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Medication Adherence and Assessment of Quality of Life in Type 2 Diabetes Mellitus Patients in Urban Area of Bengaluru

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Abstract

A Hyperglycemia and abnormalities in the metabolism of carbohydrates, fats, and proteins are the characteristics of diabetes mellitus (DM), a set of metabolic disorders. It happens as a result of problems with insulin sensitivity, insulin secretion, or both. There may be long-term neuropathic, microvascular, and macrovascular complications. Medication adherence is the extent to which a patient's behavior in taking their medications corresponds with their intention in following their doctor's advice. Incorrect medicine administration by the patient may result in a perception of diminished pharmacological effectiveness. The people are divided into adherent, somewhat adherent, and non-adherent categories. Patients who take 80% or more of the recommended dosage are deemed adherent, whereas those who take less than 80% are deemed non-adherent. The results of the treatment would be harmed by non-adherence. The goal of the study was assessment the quality of life in Type II diabetes mellitus patients to in urban area of Bengaluru. The study also aimed to assess the medication adherence in Type II diabetes mellitus patients in urban area Bengaluru. Out of 109subjects, 72(66.05%) of them were male and 37(33.94%) of them were female. In the mental component of health status, vitality and role limitation due to emotional health are the two scales with mean score less than 50%. However the social functioning and general mental health status was found to be good with mean score of 66.05% and 61.43% respectively.
The overall medication adherence among the subjects was found to be excellent (42.20%).

Keywords: Diabetic mellitus, Quality of life, Medication adherence, Non-adherence

Introduction

Hyperglycemia and abnormalities in the metabolism of carbohydrates, fats, and proteins are the characteristics of diabetes mellitus (DM), a set of metabolic disorders. It happens as a result of problems with insulin sensitivity, insulin secretion, or both. There may be long-term neuropathic, microvascular, and macrovascular complications. Medication adherence is the extent to which a patient's behavior in taking their medications corresponds with their intention in following their doctor's advice. Incorrect medicine administration by the patient may result in a perception of diminished pharmacological effectiveness. The people are divided into adherent, somewhat adherent, and non-adherent categories. Patients who take 80% or more of the recommended dosage are deemed adherent, whereas those who take less than 80% are deemed non-adherent. The results of the treatment would be harmed by non-adherence. The World Health Organization WHO has defined QOL as “as individual’s perception of their position in

life in the context and value systems in which they live and, in their goals, expectations, standards and concerns." QOL in patients with diabetes, becomes even worse when complications develop, or comorbidities exist. Diabetes can negatively affect physical well-being, long term and short-term complications.

Purpose of the study

The objectives of the present study are:

a) It assessed the quality of life in Type II Diabetes Mellitus patients to in urban area of Bengaluru.
b) It assessed the medication adherence in Type II Diabetes Mellitus patients in urban area Bengaluru.

Material and Methods

This is a cross- sectional study it was conducted for 6 months conducted at Chikkabanavara, urban area of Bengaluru. A total of 109 subjects fulfilling the inclusion and exclusion criteria were included in the study. Personal interview was conducted, data was collected by **Validated Questionnaire SF-36** and **Morisky-medication-Taking Adherence Scale-MMAS.** All of the data was entered using MS Excel software and analyzed using SPSS 22 version software for determining for the statistically significant. Descriptive statistics such as average were calculated for categorical variables. Histogram and pie charts were applied to find the nature of data distribution.

Inclusion criteria:

a. Above 40 years of age.
b. Both the gender.
c. Those are diagnosed with type 2 diabetes mellitus.

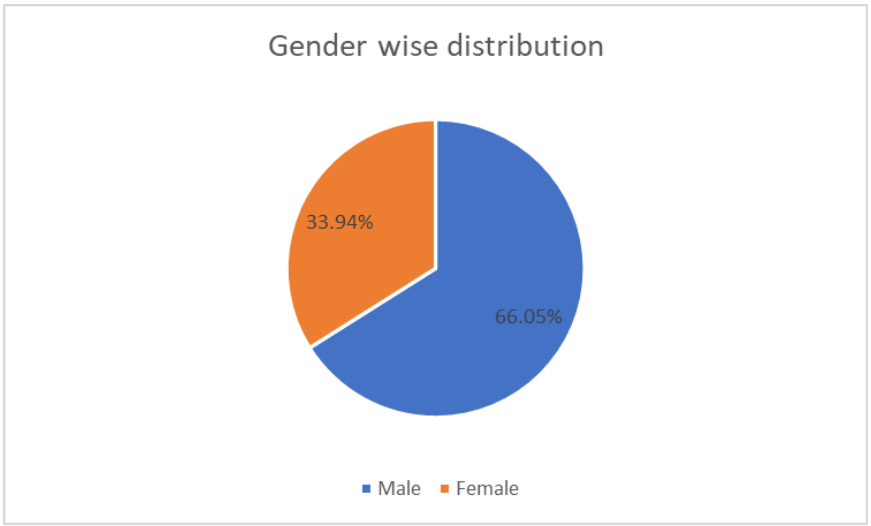
Exclusion criteria:

a. Pregnant and lactating women.

Results:

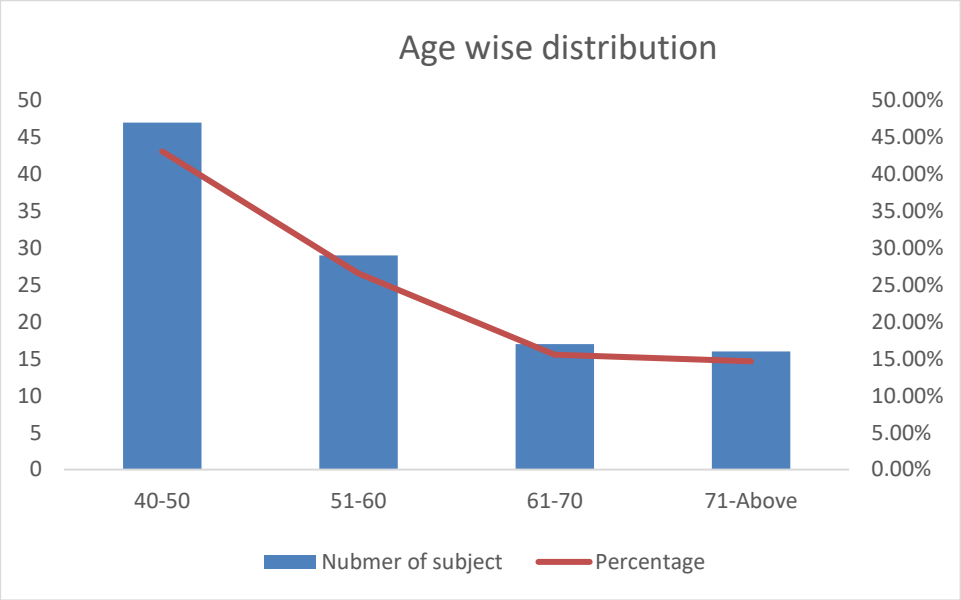
The study included 109 Subjects from Chikkabanavara, Bengaluru Urban. The study was conducted for 3 months.

Figure 1: Distribution of subjects by gender.



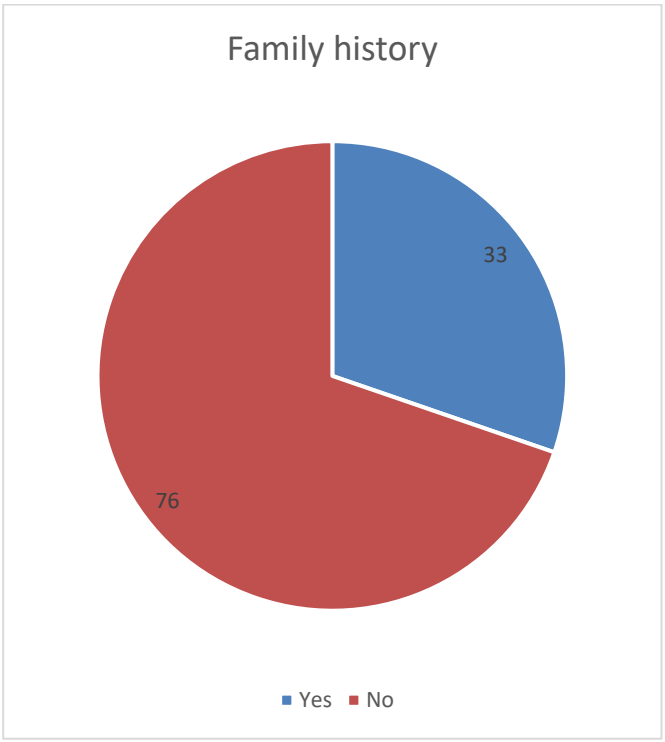
Out of 109 subjects, 72(66.05%) of them were male and 37(33.94%) of them were female.

Figure 2: Age wise distribution



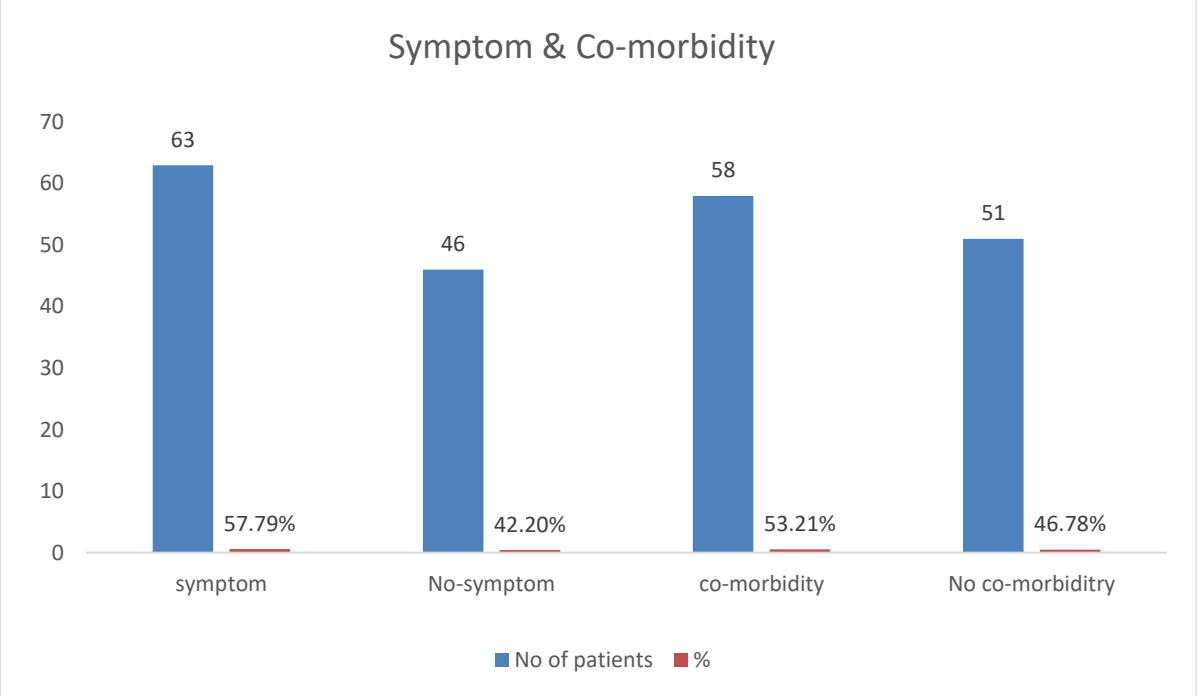
47 subjects (43.11%) out of 109 belonged to age group 40-50 years of age while 16 subjects (14.67%) belonged to above 71 years of age.

Figure 3: Distribution of family history



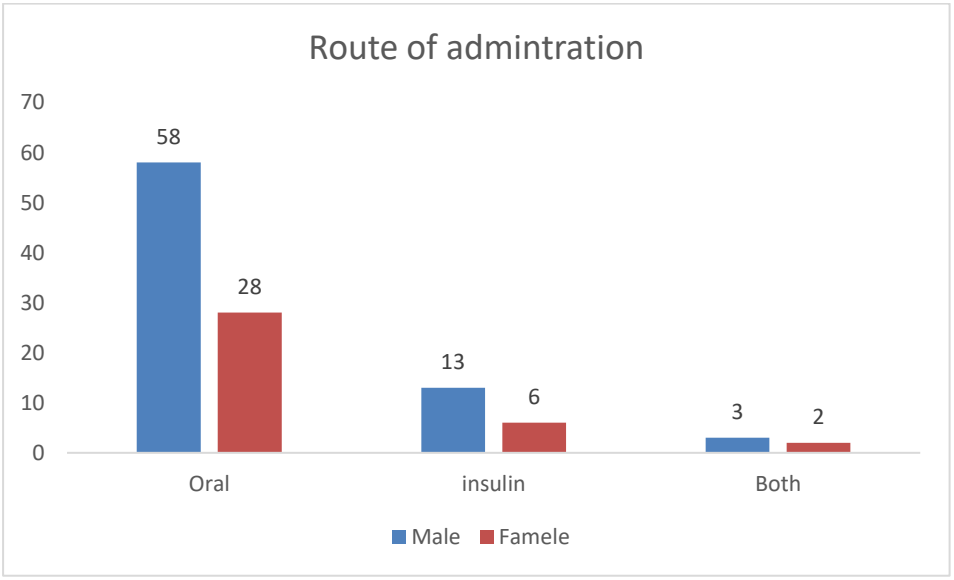
Out of 109 subjects included in the study, the majority of the subjects had no family history of diabetes 76(69.72%). however 33subjects (30.27%) had family history of diabetes.

Figure 4: Symptoms & co-morbidity



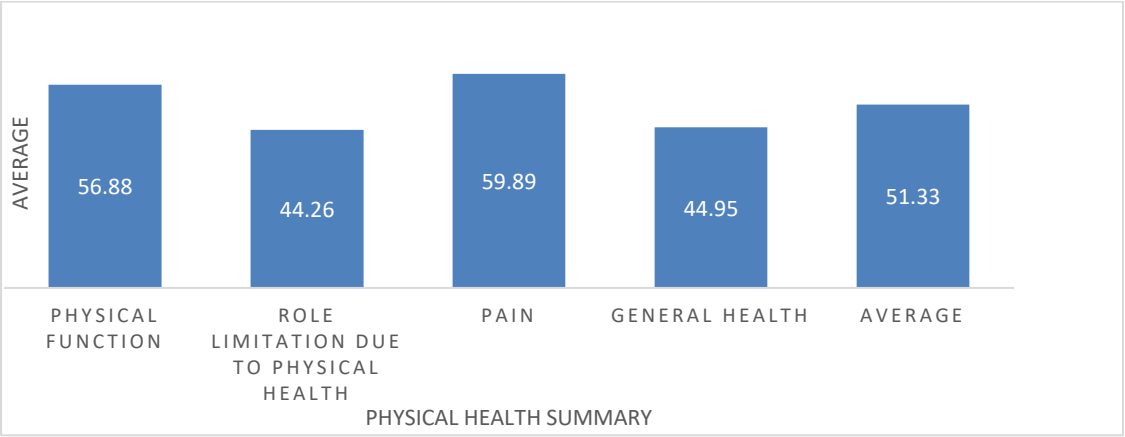
Among the study population, subjects (57.79%) with diabetes had symptoms and (42.2%) subjects with diabetes did not have symptoms. Diabetes subjects with co-morbidity was found to be 53.2% and without co-morbidity was found to be 46.78%.

Figure 5: Distribution of subjects based on route of administration of drugs



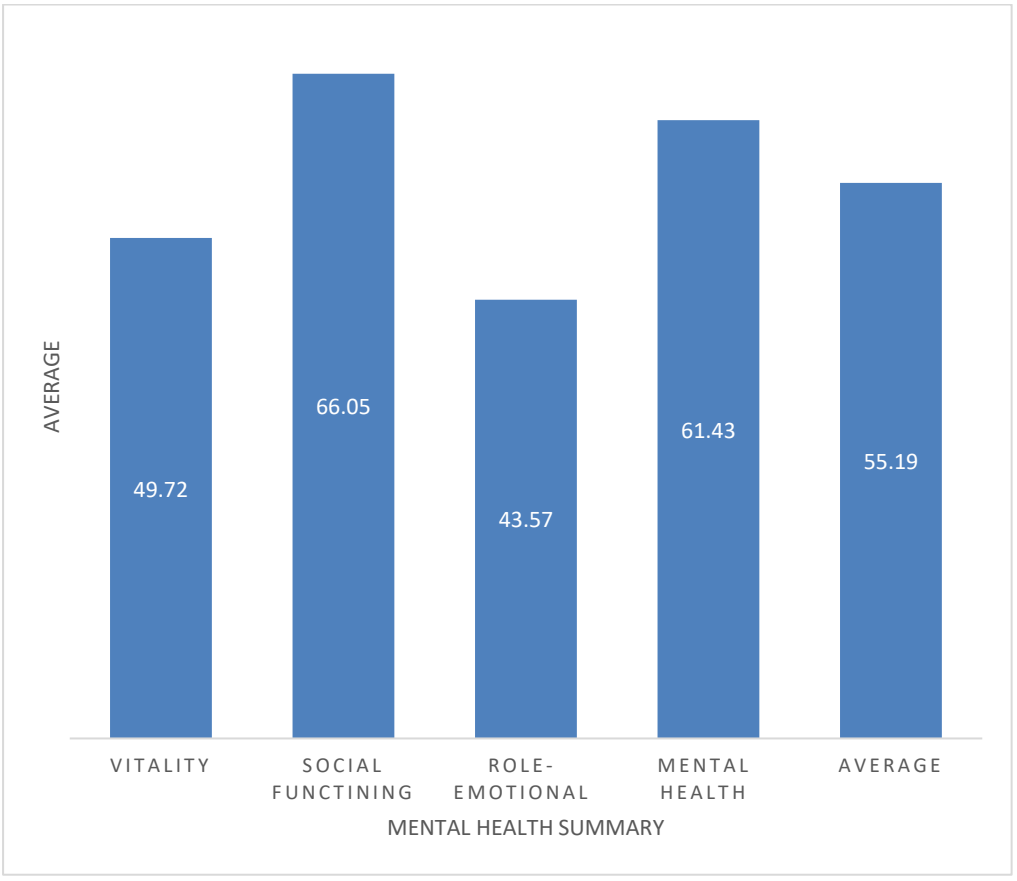
Diabetes patients in our study population were taking medication through oral and subcutaneous routes. Out of 109 subjects, 86 of them were taking medication by oral route,19 of them were taking insulin by subcutaneous route and 5 of them were taking both oral antidiabetic medications and insulin.

Figure 6: Physical component summary



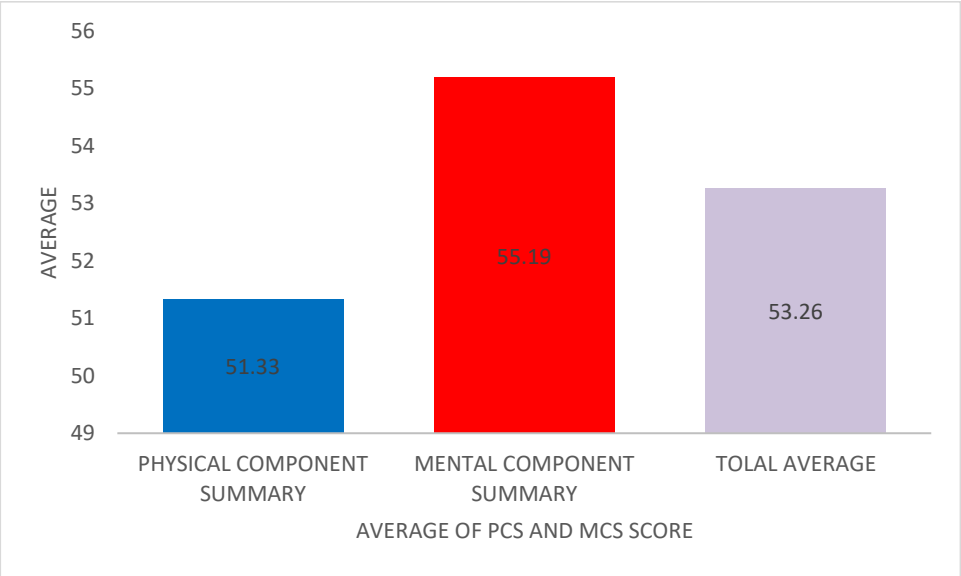
Analysis of HRQOL in the study population using SF-36 revealed the average physical functioning (PF) role limitation due to physical health (RLPH), pain and general health to be 56.88±21.99, 44.26±41.34, 59.89±21.10 and 50.84±15.12 respectively. In our study pain dimension had maximum subject of 59.89 and Role limitation due to physical health dimension had least average of 44.26.

Figure 7: Mental component summary



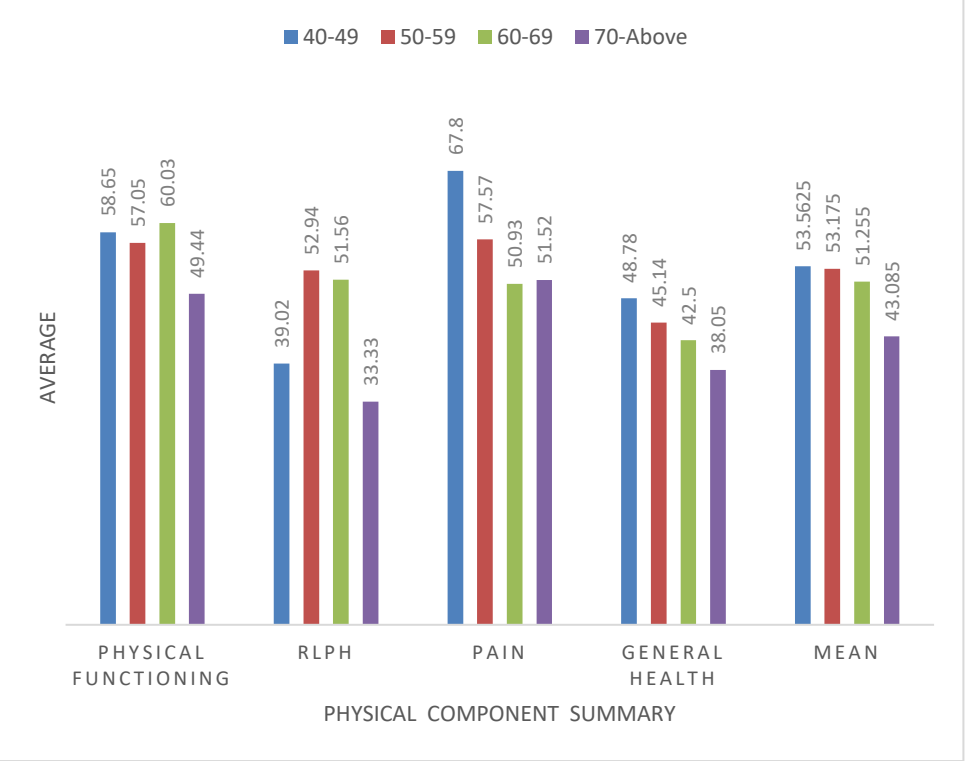
Analysis of mental component revealed the average of vitality, social functioning, role limitation, mental health, to be 49.72±9.90, 66.05±19.48, 43.57±43.38 and 61.43 ±14.63 respectively. In our study social function had the highest average i.e. 66.05 and role emotional had the least average that is 43.57.

Figure 8: Average of PCS and MCS



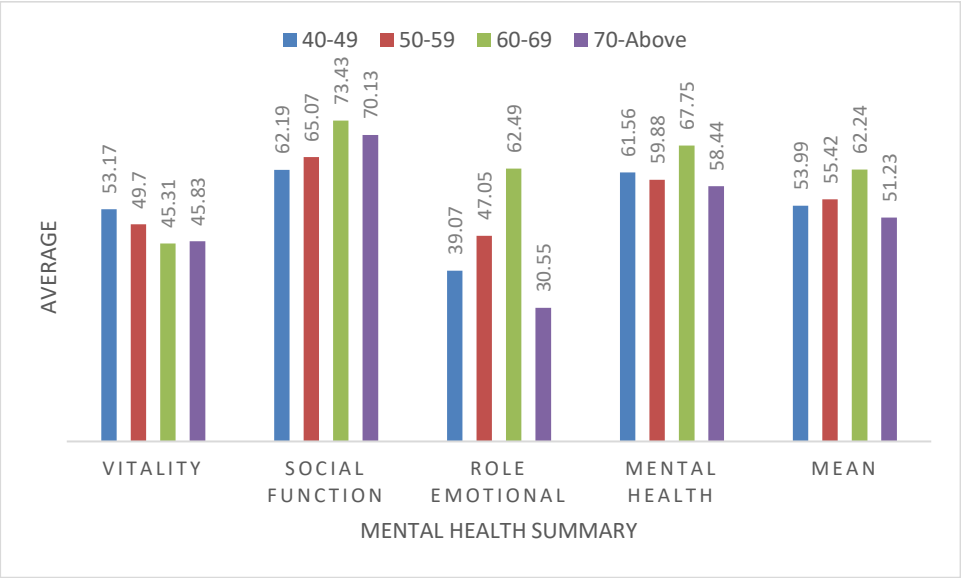
The total average of four dimensions each under PCS and MCS was found to be 51.33 and 55.19, respectively and the overall average of both PCS and MCS was 53.26, as shown in figure.

Figure 9: Comparison of quality of life in patients of different age groups pcs



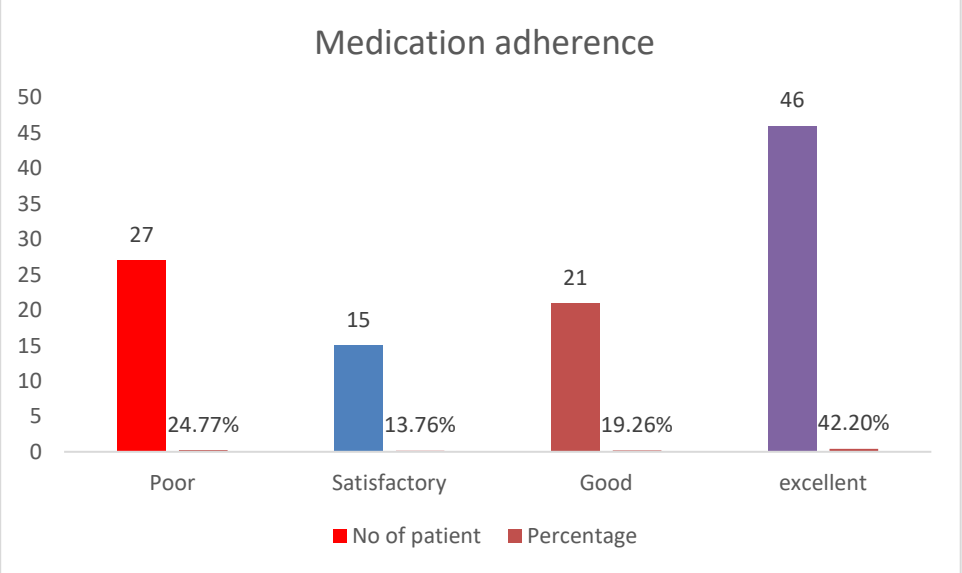
On comparing the QOL scores in subjects of different age groups, it was found that the subjects belonging to the age group 70 above had lowest mean score for PCS that is 43.085, as shown in Table 6. Figure 14 represents the average QOL scores under each PCS domain i.e. Physical Functioning, Role limitation due to physical health, Pain and General health within different age groups.

Figure 10: Comparison of quality of life in patients of different age groups mcs



On comparing the QOL scores in subjects of different age groups, it was found that the subjects belonging to the age group 70 above had lowest mean score for MCS i.e. 51.23, as shown in Table 7. The average QOL scores under each MCS domain i.e. Social Functioning, Role limitation due to emotional problems, energy and emotional well-being within different age groups has been represented in figure 9.

Figure 11: Distribution of subjects based on medication adherence



Out of 109 subjects, 46(42.20%) of them had excellent adherence and 27(24.7%) had poor adherence.

Discussion:

This observational study was conducted in the chickkabanavara, Bengaluru for period of 3 months from June 2023 to September 2023. The subjects were categorized according to age, Duration of disease, family history of disease, symptoms and co-morbities and route of administration of drugs Out of the 109 subjects who participated in the study, the majority of them belonged to the age group of 40-50 years (54.45%)

(n=47), and the number of males (66.05%) (n=72) were more than males. (33.94%) (n=37). This study correlated with previous study conducted by *Leticia Manuel Apoliner et al.,* (2014). Majority of the participants in the study complained about pain, weakness and excess urine secretion as major symptoms. The more prevalent co-morbidity found was hypertension among the study subjects with Type II DM. study correlated with previous study conducted by *Nelly Cisneros Gonzalez et al.,* (2014). Family history of Type 2 DM was less common in our study population. This observation was different from the study conducted by ***N Freemanlte et al.,* (2013).** Majority of the subjects were on oral anti diabetic drugs than insulin drug. The SF-36 questionnaire was used to measure HRQOL. According to the study's findings, the physical functioning, role limitation due to physical health, pain, and overall health scores for physical compartment summery (PCS) patients were (56.88%), (44.26%), (59.89%), (50.84%), and (44.95%), while the mental components' scores for vitality, social function, and the role of emotional and mental health were found to be (49.72%), (66.05%), (43.57%), and (61.43). SF-36 items and scales are scored so that a higher score indicates a better health state.

For functioning scales higher score indicates better functioning and for the pain scale higher score indicates freedom from pain. In the physical component summary, it was observed that subjects with Type II DM had better physical functioning with lesser bodily pain (56.88%,59.89% respectively) The mental component summary also shows the subjects with Type II DM had better social functioning and mental health (66.05%,61.43 respectively). When the QOL scores of the subjects in the various age groups were compared, it was found that the subjects in the age group ≥ 71 years the lowest mean score for the physical component summary, which was 43.08, And also lowest mean score for the mental component summary, which was 51.23.

which is similar to the study conducted by *Meyboom de jong et al.,(2001).* This shows that compared to other age groups people ≥ 71 years of age indicate more disability due to the disease. Medication Adherence among the subjects was assessed by using Morisky Medication-Taking Adherence Scale (MMAS 4). 42.20% of subjects showed excellent adherence and 24.77% showed poor adherence. The excellent adherence to the drugs may be the reason for better physical and mental score seen as the HRQOL outcome in the study. The study proves that people in the region of Chikkabanavara are more physically active and aware of the importance of medication adherence which is an essential understanding required to maintain good Quality of Life in people with Type II Diabetes mellitus.

Conclusion

This study showed predominance of male population (72, n=109) over female population (37, n=109) with Type II Diabetes Mellitus in the region where the study was conducted. Majority of the subjects were from age group of 40-50 years, having duration of disease less than 5 years. This proves that 40-50 years of age, is the age when diabetes is detected and family history of diabetes does not play significance in occurrence of diabetes. With regard to Type II Diabetes mellitus the study showed 57.79% had symptoms of diabetes and 53.2% had co-morbidity and the most frequent co-morbidity was hypertension. With regard to use of medications, oral medications were the most commonly used form of medicine.

Analyzing HRQOL by scales, it was found that role limitation due to physical health and general health perception had mean score less than 50%, which was the most affected scales in the physical component of health status. However, the physical functions and disability due to pain was not compromised by the disease. In the mental component of health status, vitality and role limitation due to emotional health are the two scales with mean score less than 50%. However, the social functioning and general mental health

status was found to be good with mean score of 66.05% and 61.43% respectively. The overall medication adherence among the subjects was found to be excellent (42.20%).

From the study it is evident that Type II Diabetes Mellitus is a chronic disease which affects the physical and mental status of an individual. However good medication adherence does not allow deterioration of health status and can improve quality of life of patients with Diabetes Mellitus.

Continuous awareness program about early detection of the disease, regular checkups, diet restriction and medication adherence can improve the Quality of Life of patients with Type II Diabetes Mellitus.

Conflict of interest

There is no conflict of interest.

Acknowledgement

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