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Study on management and impact of pharmaceutical care services on health-related quality of life in Type 2 Diabetes Mellitus patients at a Private tertiary care teaching hospital

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Abstract

Aim: To study the management of Type 2 diabetes mellitus by analyzing the prescribing pattern and to determine the impact of pharmaceutical care services on health-related quality of life in Type 2 diabetes mellitus patients using SF-36 questionnaire.
Methodology: The prospective comparative study was conducted in 98 Type 2 Diabetes Mellitus patients for a period of 6 months at Vivekanandha Medical Care Hospital, Elayampalayam. The drugs prescribed were analyzed for their indication and efficacy (Lexicomp, Micromedex). Patient counseling was provided using patient information leaflet and quality of life was assessed using the SF-36 questionnaire.
Results: For the management of Type 2 Diabetes Mellitus Glimepiride (39.21%) and Metformin (35.94%) were widely prescribed. Health-related quality of life was affected mainly in Physical functioning and General health domains. Significant improvement was found in the Intervention group for all the domains during follow up.
Conclusion: Providing pharmaceutical care services improve the patient understands about their condition &health-related quality of life.
Keywords: Type 2 diabetes mellitus, Health-related quality of life, Management, SF-36 questionnaire, pharmaceutical care.

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1. Introduction

WHO defines Diabetes Mellitus as a chronic disease caused by inherited and/or acquired deficiency in the production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. As a result, there is an increase in the concentration of glucose in the blood, which in turn damage many of the body's systems, in particular, the blood vessels and nerves.[1] The adverse effects of Type 2 DM interact to impair the multiple dimensions of HRQOL. HRQOL is defined as a multi-dimensional concept which includes domains related to physical, mental, emotional and social functioning that are related to or affected by the presence of disease or treatment.[2]

SF 36 is a 36 item scale which measures the 8 dimensions of an individual's health status (Physical functioning, Limitations due to physical health, Limitations due to emotional health, Bodily Pain, Vitality, Social Functioning, Mental health, and General health).[3] Measurement of HRQOL provides an overview of the patient's general health status and evaluates the effectiveness of an intervention in patients with chronic diseases such as Type 2 DM. With the wide transitions in the spectrum of diseases, assessment of HRQOL is becoming necessary in the measurement of health status and assessment of clinical effectiveness. [4]

2. Methodology

The study was carried out in a 300 bedded multi-specialty tertiary care teaching hospital (Vivekanandha Medical Care Hospital, Elayampalayam) in the departments of Diabetology and General Medicine over a period of 6 months (February 2018 – July 2018). A patient consent form was prepared and obtained written consent from all the patients or from the caregivers after providing the information format. SF 36 (Short Form Health Survey) questionnaire was used to assess the Health-Related Quality of Life. A scoring algorithm is used to calculate the scores for the eight domains. Scores range from 0 to 100 with '0' corresponding to worst possible health and '100' corresponding to the best possible health. A patient information leaflet was designed to bring awareness among the patients on various aspects of Type 2 diabetes mellitus and counseling was given after assessing the patient's quality of life. About 106 patients were screened and 98 were included in the study after getting the patient's consent. 50 patients were enrolled in the Control group and 48 patients were enrolled in the Intervention group. Patients were enrolled on the basis of certain criteria.

2.1 Inclusion criteria:

- Patients diagnosed with Type 2 DM.
- Patients receiving at least one oral hypoglycemic agent or insulin.
- Patients who are willing to participate in the study.
- Gender: Male and female
- HbA1c value > 6.5 %

2.2 Exclusion criteria:

- Patients with Type 1 DM.
- Patients who are not willing to participate in the study.
- Patients with diabetic complications.
- Pregnant and lactating women.
- Patients with insufficient data in their records.

2.3 Statistical analysis

The statistical analysis was done using Microsoft Excel and GraphPad InStat DTCG (GPI v 3.0). The paired t-student test was used for intra-group analysis (baseline and final scores) and the unpaired t-student test was used for inter-group analysis using the GraphPad InStat DTCG (GPI v 3.0).

3. Results

The study was conducted on 98 Type 2 diabetes mellitus patients. Gender wise distribution of Type 2 DM patients showed that 59.1% were male patients and 40.8% were female patients. Based on age categorization, 45.9% of patients were within the age group of 51-60 years. Social history showed that 29.5% were alcoholic, 27.5% were smokers, 12.2% were both alcoholic and smokers, 7.1% were tobacco chewer and 23.4% were devoid of these habits. Among 98 patients, 14.2% had a normal BMI, 63.2% were overweight, 1% was underweight and 21.42% were obese.

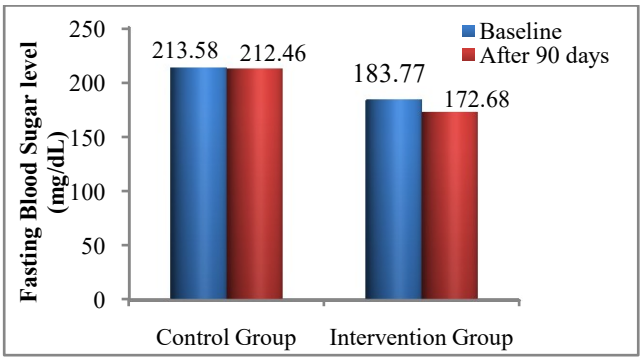

Figure 1: Changes in fasting blood sugar levels (FBS)

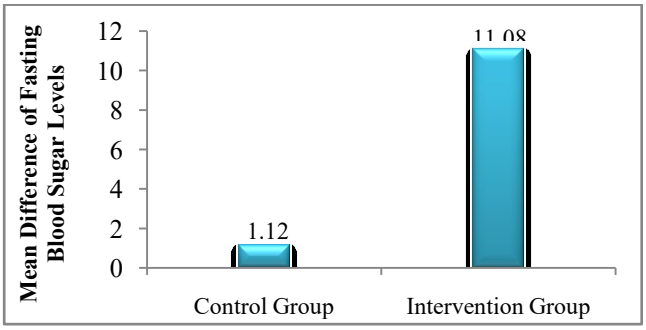

Figure 2: Mean difference in fasting blood sugar levels

The mean change in fasting blood sugar levels (FBS) in the Control group was found to be not significant whereas it was found to be significant ($p < 0.0001$) in the Intervention group.

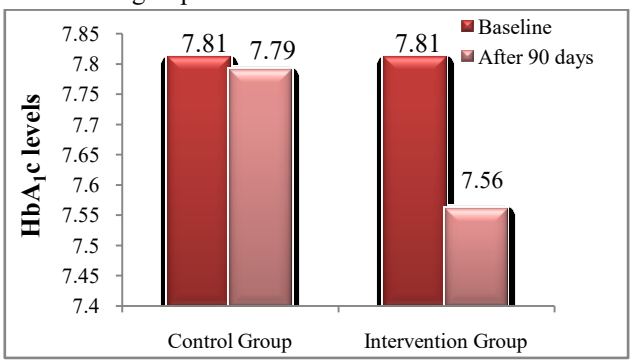

Figure 3: Changes in HbA_1c levels

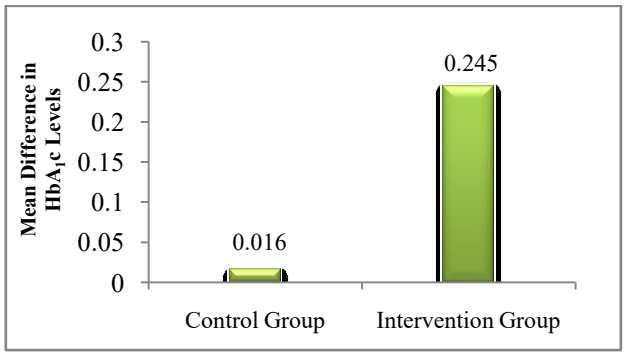

Figure 4: Mean differences in HbA_1c level

HbA_1c levels were decreased in both groups imply that mean change in HbA_1c levels in control and intervention groups were found to be significant.

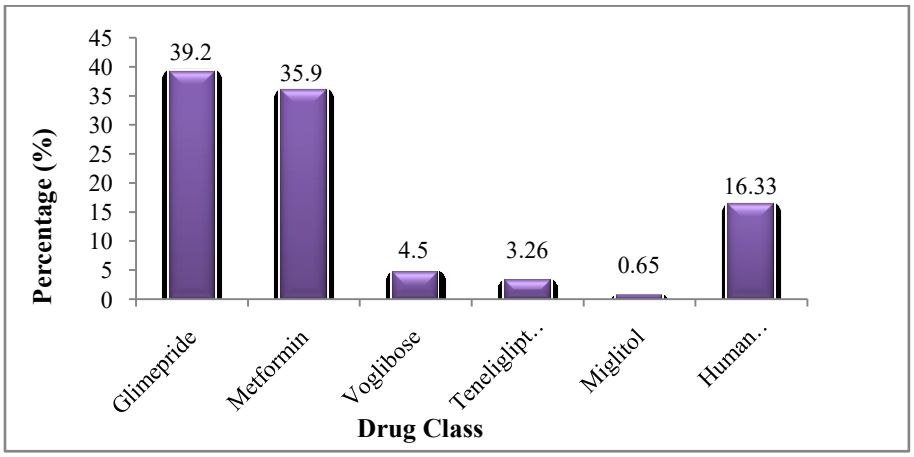

Figure 5: Anti-diabetic drugs prescribed for type 2 diabetes mellitus

Different classes of oral hypoglycemic agents and insulin were prescribed for the management of Type 2 diabetes mellitus. Among the oral hypoglycemic agents prescribed Glimepiride has the highest number 60 (39.21%) followed by Metformin 55 (35.94%), 7 (4.57%) were Voglibose, 5 (3.26%) were Teneligliptin and 1 (0.65%) was Miglitol. Inj. Insulin was prescribed for 25 patients (16.33%).

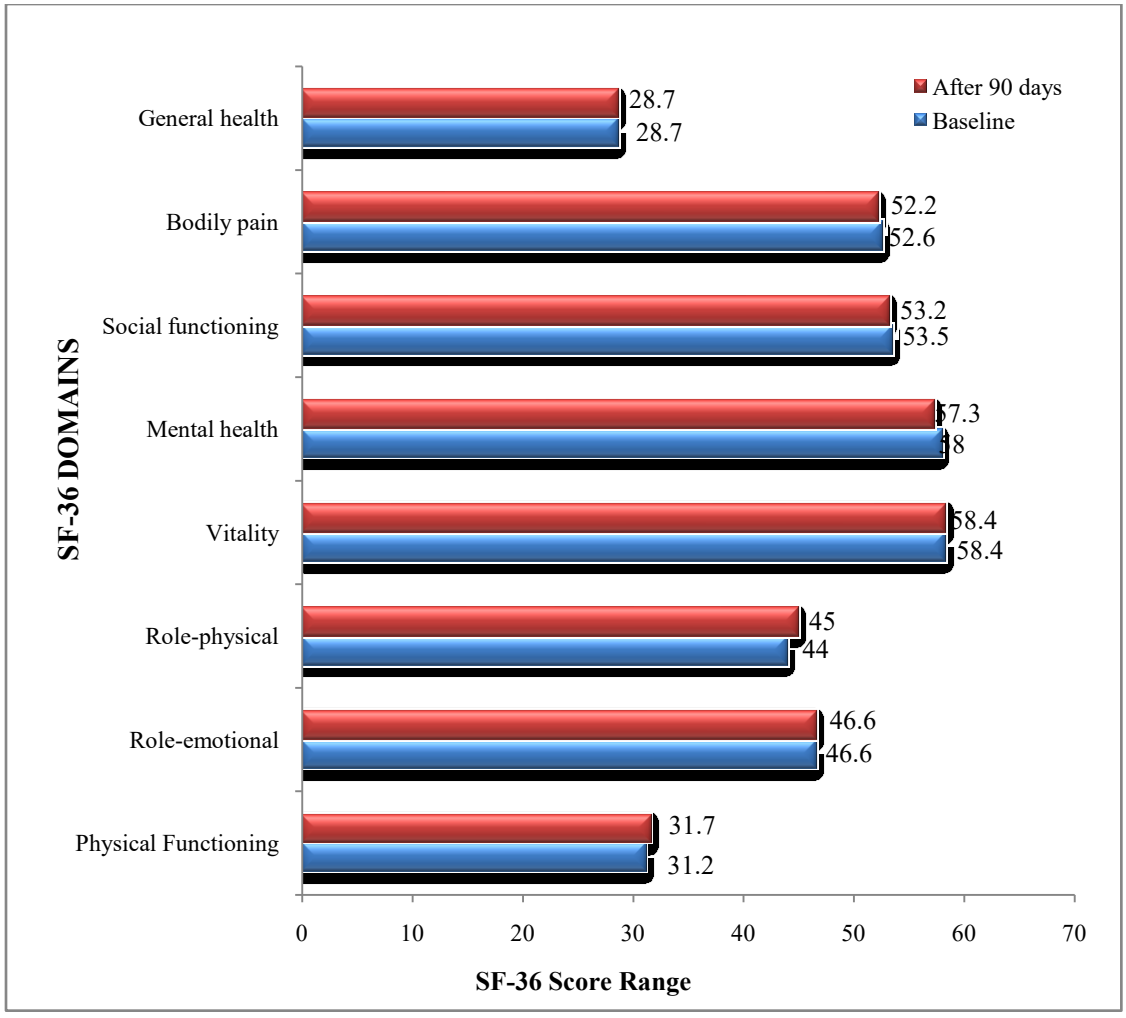

Figure 6: SF-36 Domain scores at Baseline and after 90 Days (control group)

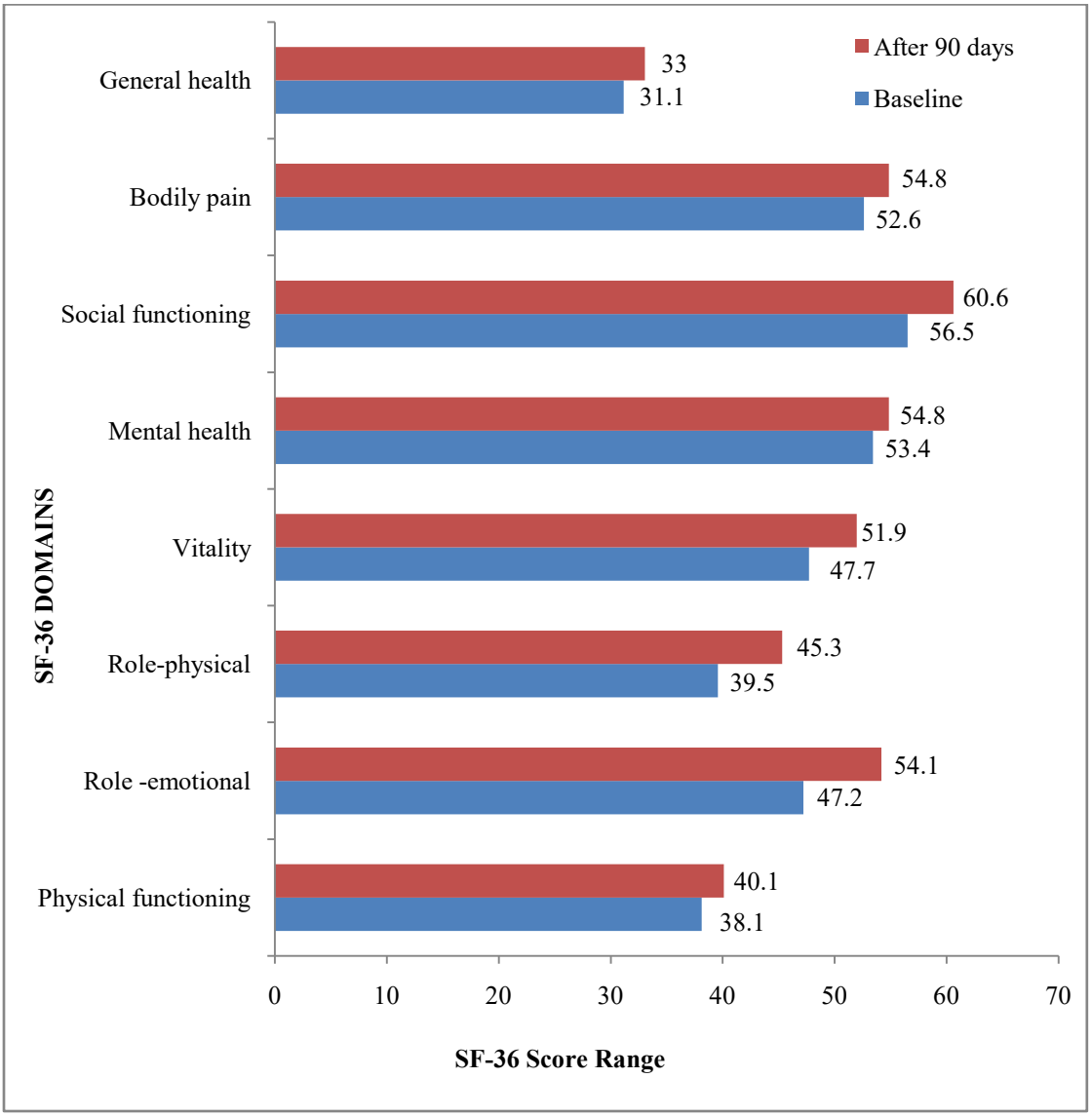

Figure 7: SF-36 Domain scores at Baseline and after 90 Days (Intervention Group)

Health-Related Quality of Life of the patients was assessed using the SF-36 questionnaire. At baseline, the mean control domain scores for the SF-36 were higher in some cases than the intervention group. At the end of 90 days, the Intervention group patient's quality of life scores was found to be improved whereas those of the control group patients remained relatively constant.

4. Discussion

Types 2 Diabetes Mellitus is a progressive disease causing damage to multiple organs. Risk factors for Type 2 Diabetes Mellitus include obesity, Genetics, Hypertension, Hyperlipidemia, and Race. Once Type 2 Diabetes Mellitus is diagnosed, it is important to provide standard care for the patients to prevent further complications. In this study, the incidence of Type 2 Diabetes Mellitus was higher in males [5] with 59.1% and females with 40.8%. Based on age distribution, 45.9% of patients fall in the age group of 51 – 60 years which was supported by the study conducted by Lolita *et al*.[6]

In this study, social habits like alcohol consumption (29.59%) and smoking (27.55%) were found to be higher among the participants. Similar results were obtained in a study conducted by Eylem Ilktac Korcegez *et al*[7]. In this study, the average fasting blood glucose levels and HbA_1c levels were found to be reduced in both intervention and control groups. Similar results were observed in the study conducted by Sriram S. *et al*.[8] Drugs prescribed for Type 2 diabetes mellitus include oral hypoglycemic agents and human insulin. Human Insulin comprised only (16.3%) of total prescriptions. Among oral hypoglycemic agents, Glimepiride (39.2%) was the highest followed by Metformin (35.9%). A similar study was conducted by Puji Asmini *et al*.[9]

Assessment of Health-Related Quality of Life in both groups at baseline reveals that domains like General Health [Control (28.7± 20.8) and Intervention (31.1±18.6)] and physical functioning [Control (31.2±19.5) and Intervention (38.1±21.4)] were most affected. The mean scores after 90 days showed a significant difference ($p< 0.01$) among the intervention group when compared with the control group. Mean scores among control group patients after 90 days remained constant. The above results were similar to the observations in the study conducted by Nadia Rashid Al Mazroui *et al*.[10] The present study highlights the importance of pharmaceutical care services in improving the Health-Related Quality of Life.

5. Conclusion

The study was concluded that Glimepiride and Metformin were the most frequently used medications for the treatment of Type 2 diabetes mellitus. The quality of life (QOL) in general was decreased in diabetic patients regardless of gender. It shows that diabetes affects various domains such as Physical functioning, Emotional well-being, Social functioning, Economical status and General health in a patient's life, thereby affecting the QOL. Educating the patients using leaflet showed improvement in the health-related quality of life.

Conflict of Interest: None

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