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An assessment and evaluation of patient compliance in type ii diabetes mellitus in general medicine department of tertiary care hospital

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ABSTRACT

Type 2 Diabetes mellitus or insulin dependent diabetes comprises 90% of the people with diabetic and is a challenging disease to manage successfully. The prevalence is very high in Indians. According to World Health Organization patient compliance towards long term therapy for chronic disease indicates only around 50% in India. A prospective observational survey was carried out for the duration of 8 months among the patients. Medication adherence to diabetes medicine was determined using a modified version of the eight items self-reported Morisky medication Adherence Scale (MMAS).Each item is in a yes/no format, with a maximum possible score of eight equating very poor adherence and zero considered as good adherence. 108 patients were included in the study.54 in the control group and 54 in the intervention group. Intervention group showed more statistical significance (*p* value< 0.05) for patient compliance as compared with control group. Pharmacist care will significantly improve the therapeutic goal in the achievement of better patient compliance.

Keywords: Diabetes mellitus, World Health Organization, tertiary care hospital

INTRODUCTION

Diabetes mellitus is a growing global health problem that affects all patients.347 million people worldwide has diabetes. World Health Organization projects that diabetes will be the 7th leading cause of death in 2030.Type 2 diabetes comprises 90% of people with diabetes around the world. Largest increase in the number of people with diabetes is predicted to take place in countries with developing economies. Increase in obesity rate and changes in diet and lifestyle are the leading causes. Patients with type II Diabetes have three fold risk of death from cardiovascular diseases. Risk of death from all cases is increased by approximately 75% when compared to patients without diabetes [1]. Rate of non adherence with any medication therapy may vary from 15% - 93% with an average estimation rate of 50%. In India presently estimated to have 41 million individuals affected by diabetes mellitus. Every fifth diabetic in the world being an Indian. Key determinant of diabetes is the medication adherence [2].

MANAGEMENT OF DIABETES MELLITUS

1. **Appropriate goal setting**

   The goal of treatment of diabetes mellitus is to improve the Quality Of Life (QOL) and lifespan when compared to those of healthy people. A prerequisite for this is the prevention of onset and progression of vascular complications. Diabetes can impact all aspects of life. Diabetes can be managed by setting goals in healthy eating, physical activity, blood glucose monitoring, medication, reducing risk, keeping well and avoid stress [3].

2. **Dietary and exercise modifications**
   Focuses on high fiber and low fat food. Glycemic index means measure of how quickly a food attains increase in the blood sugar level. Patients have to follow low glycemic index food containing high fiber. Whole grains, fruits and vegetables should be in the diet. Making physical activity as daily routine is necessary for diabetes management. Walking, swimming and yoga will help to lower blood sugar level. If you haven't been done start slowly and build up gradually. Exercise improves metabolic control, improves glucose tolerance as insulin sensitivity increases, weight lose due to increased energy expenditure, increased work capacity, and feeling of well being [3].

3. **Medications**
   Anti diabetic tablets require insulin present in the body to be active. Mainly five classes of drugs are used. Biguanides, sulphonylureas, meglitinides, thiazolidinediones, and alphaglucosidase inhibitors. Along with medication, diet control and lifestyle changes are also necessary. Metformin, insulin, and sulphonylurea drugs are more effective in controlling macro vascular and micro vascular complications [4].

4. **Appropriate self monitoring of blood glucose**
   It is a valuable tool in the diabetes management. Careful and regular monitoring is the only way to make sure that blood sugar level is under control.HbA1c test done every 2-6 months. It measures the glucose in the blood attached to the part of red blood cells. Sometimes it will be unpredictable; it develops confidence in looking after diabetes [4].

5. **Regular monitoring for complication**
   Diabetes mellitus leads to chronic complications and they are generally divided into macro vascular and micro vascular complications. Retinopathy, nephropathy, and neuropathy are micro vascular complications [5].

6. **Laboratory assessment**
   Regular checking of blood sugar level, HbA1c level, and kidney function test will provide better management of diabetes [5].

PATIENT COMPLIANCE However medication alone is not a cure for diabetes. If the patient doesn't know the importance of nutrition, physical activity, blood glucose monitoring, regular monitoring of complications he is not able to achieve therapeutic goal. Patient themselves are responsible for the daily basis for regulating the blood sugar level. Aim of patient education is only to support and encouragement. According to World Health Organization Non adherence regarding medication is a serious problem in case of chronic diseases such as Diabetes mellitus. Even though it is a chronic illness the patient compliance towards the disease was found to be unsatisfactory. This study will be conducted to assess and evaluate the patient compliance in type 2 diabetic patients in a tertiary hospital. Through this study we can improve the medication adherence by giving patient counseling. Adherence is defined as the extent to which a patient's behavior in terms of taking medication, executing life style changes, or following diets coincides with medical advice. Medication adherence is essential in order to obtain the full therapeutic benefit of diabetes management. There are direct and indirect methods used for assessing medication adherence. More conveniently, questionnaires have been found to provide more accurate assessment of medication adherence by comparing with other methods [5,6].In the diabetes management patients are expected to follow a complex set of behavioral actions on a daily basis. These actions includes taking medications, monitoring blood glucose level, doing some physical activities, following a meal plan, foot care, responding to diabetes related problems and seeking medical care[20]. The main cause of non compliance is the complexity of the dosage regimen. Patients are asked to take medication lifelong. Poor adherence compromises safety and treatment effectiveness which leads to increased mortality and morbidity [7,8].

EPIDEMIOLOGY OF MEDICATION TAKING BEHAVIOUR

Detailed information about the medication taking pattern is given by electronic medication monitoring devices. Most common deviations are omission of doses, or delays in the timing of doses. Usually patients will improve their adherence before and after 5 days of appointment with the prescriber, as compared with 30 days after, is a phenomenon known as white –coat adherence.[7,9] Simple dosing regimen improves the patient adherence [9,10].

BARRIERS TO MEDICATION ADHERENCE

Majority of medication non adherence is under control of patients, so attention to them is important to improve adherence. In responses to a questionnaire patient's reports on the reasons for not taking their medication includes forgetfulness, omission of doses, lack of information and emotional factors. Prescribers contributes the patient non adherence by prescribing complex dosing regimen, not providing the information about drugs, its side effects, and lack of therapeutic relationship with the patients [11, 12] Health care system also creates barriers to medication adherence by using a restricted formulary, switching to

a different formulary, limiting access to health care, having prohibitively high cost for drugs, copayments or both [13]

MATERIALS AND METHODS

A prospective observational survey was carried out for the duration of 8 months among the patients who were admitted in the general medicine department of the hospital. All the diabetic patients above 20 and below 80 years of age of either sex were included in this study. Pregnant women, type1 diabetic patients, patient above 80 years of age, patients who were not able to answer the questionnaire were excluded. Patients were included after getting oral or written informed consent. For data collection and documentation patient data entry form was designed which includes information of patient demographics (patient's name, age, sex, IP no, OP no, date of admission, date of discharge), social history, family history, marital status, diagnosis, past medical history, past medication history, laboratory data and currently prescribed drugs. Adherence to treatment has been assessed during a personal interview with each patient using a questionnaire. Medication adherence to diabetes medicine was determined using a modified version of the eight items self-reported Morrisky medication Adherence Scale (MMAS).Each item is in a yes/no format, with a maximum possible score of eight equating very poor adherence and zero considered.

RESULTS

A total of 108 diabetic patients were enrolled in this study. Out of which 67were males and 41 were females. Thus there was a slight preponderance of male patients. The study population was categorized on the basis of age and shows that majority of patients were belongs to 5-60 age group. 38.89% patients were smokers, 4.63% patients were alcoholics, 5.56% patients were smoker and alcoholics, and 1.85% patients were tobacco users. commonly observed disease conditions were hypertension in 29 patients, chronic obstructive pulmonary disease in 11 patients, respiratory tract infections in 8 patients, renal diseases in 7 patients, hepatic infections in 4 patients, ulcer diseases in 5 patients, urinary tract infections in 7 patients, pulmonary edema in 5 patients and seizure in 1 patient. Various prescribed drugs were Glimepiride in 19.44% patients, Metformin in 8.33%, Glibenclamide in 7.41%,Glipizide in 1.85%,Gliclazidein 1.85% patients, Glimepiride and Metformin combination in 24.075, Glibenclamide and Metformin combination in 12.96%patints, Gliclazide and Metformin combination in 5.56%, Sitagliptine and Metformin combination in 4.63%, Glipizide and Metformin combination in 12.96% and Glimipiride+Metformin+Voglibose combination in 0.93% patients. Morrisky medication adherence questionnaire contains 8 questions. Each question carries minimum zero and maximum one score. Patients with maximum score of 8 was categorized under high adherence (4.63%), score between 6 to 8 considered as medium (74.07%) and below 6 was considered as low adherence(38.89%).Most of the patients were medium adherent67.8% of patients were reported diet adherence and 26.1% were not. 24.3% patients were lifestyle adherent.

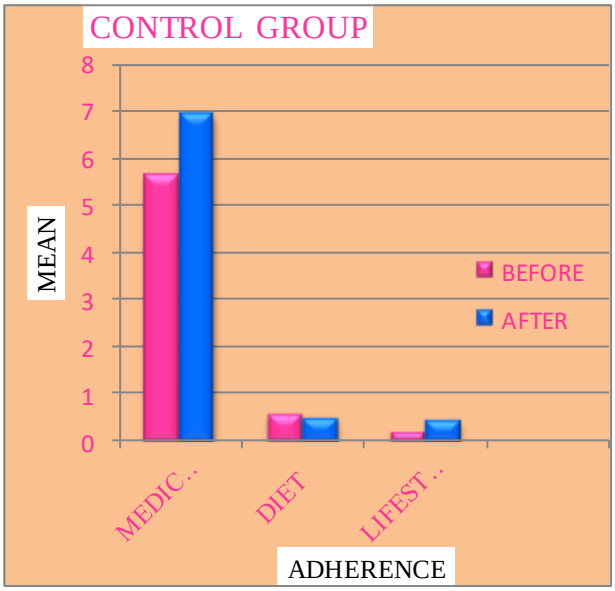

Figure 1: Control Group

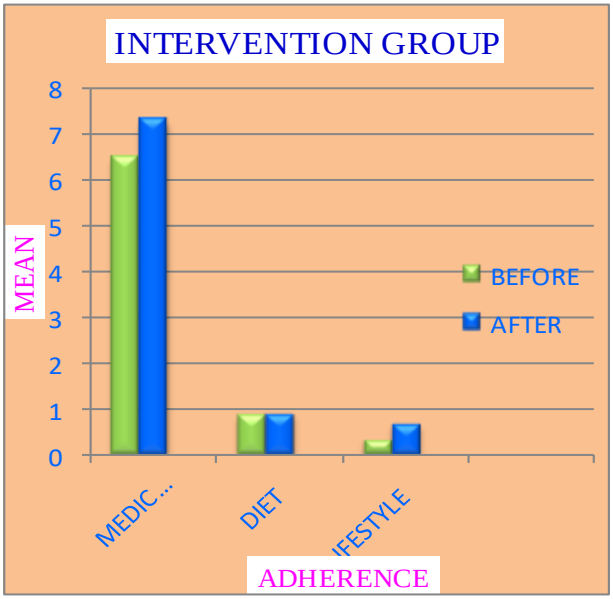

Figure 2: Intervention Group

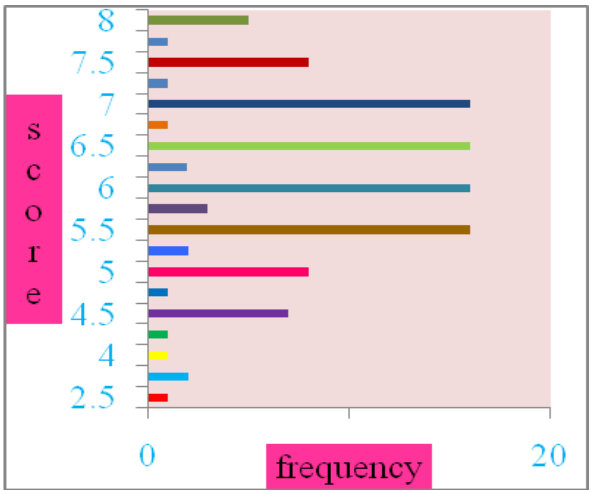

Figure 3: Score statistical

DISCUSSION

The data collected were organized, tabulated and analyzed using statistical method. Out of 108 study population majority of patients were under age group of 50-60.Male patients were 62.04% and 37.96% patients were female. Male patients were more in number than female patients. 56.48% patients were employed and 43.52% patients were unemployed. Out of 108 study population, 5.56% patients were belongs to high socio-economic status, 79.63% patients were from middle class, and 14.81%patients from low socio-economic status. Majority of patients were from middle socio-economic status. 93.52% patients were married and 6.48% patients were unmarried. 38.89% patients were smokers, 4.63% patients were alcoholics, 5.56% patients were smoker and alcoholics, and 1.85% patients were tobacco users. Majority of patients, 26.85% have hypertension as co-morbidity. Patients with maximum score of 8 was categorized under high adherence (4.63%), score between 6 to 8 considered as medium (74.07%) and below 6 was considered as low adherence(38.89%).Most of the patients were medium adherent. Total study population was divided into control and intervention group. Each group having 54 patients. Patient counseling was given only to intervention group. Mean score of each group before and after counseling was found and compared. By using the t value, p value is obtained. It was found to be significant.

CONCLUSION

Patient compliance is very important in the management of chronic diseases especially diabetes. Apart from taking medication patient have to follow diet control, execute lifestyle changes, regular monitoring of blood glucose level and self and regular monitoring of complications in order to get full therapeutic benefit. Effective patient counseling improves patient compliance. Patients will be more adherent if they are educated with importance of the same. Various non adherences are hesitance to initiate therapy, skipping the doses, self dose adjustment, in appropriate administration of drugs, and medication discontinuation. For the full benefit of therapy patient compliance is essential. Clinical pharmacists have to educate the patient. This will helps to improve their patient compliance. Also help to use pill boxes to organize the daily doses, various reminder method, and better communication between patient doctor and pharmacist will improve patient compliance. This will leads to improved quality of life and achievement of successive therapeutic goal.

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