A Cross Sectional Study on Effect of Distress due to Disease, on Medication Adherence in Patients with Type 2 Diabetes Mellitus in a Tertiary Care Hospital

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ABSTRACT

Introduction: Diabetes, a common lifestyle disorder, needs strict adherence to medication and self care activities, to maintain good glycemic control. However patients may become distressed due to the disease and its complications, which in turn may affect their motivation. It would be thus worthwhile to assess the impact of diabetes distress on medication adherence.

Material and methods: This study was conducted in the Department of Endocrinology at the Sri Venkateswara Institute of Medical Sciences, Tirupati, a tertiary care teaching hospital. Patients with Type 2 Diabetes Mellitus (T2DM) were assessed for presence of distress due to diabetes using Diabetes Distress Scale(DDS) and medication adherence using Morisky Adherence Questionnaire (MAQ).

Results: Of the 101 patients recruited, only 5 (4.95%) had a total DDS score ≥ 3 consistent with the presence of distress due to diabetes. However on exploring the various components of the DDS score 41(40.59%) had emotional burden and 15(14.85%) had regimen related distress. Of those 5 patients with diabetes distress, none had good adherence to medication while 64.5% of the remaining 96 patients had good adherence (p=0.007).

Conclusion: Diabetes distress (though present in only a minority of patients), is associated with poor adherence to medication regime.

Keywords: Diabetes Distress, Medication Adherence, Medication Nonadherence, Patient Compliance, Adult-Onset Diabetes Mellitus, Drug Therapy

INTRODUCTION

Diabetes mellitus (DM) is one of the most common life style disorder that affects a wide range of the global population. WHO estimates that, globally, 422 million adults aged over 18 years were living with diabetes in 2014. The largest numbers of people with diabetes were estimated for the WHO South-East Asia and Western Pacific Regions, accounting for approximately half the diabetes cases in the world.[1] Adherence to diabetes medication is one of the most important determinants for the effectiveness of therapy because poor adherence can hinder optimum clinical benefit. Adherence to treatment not only achieves a desirable glycemic level, but on a longer run reduces the morbidity and mortality among patients with diabetes.[2] Thus it is imperative to identify the root cause of non-adherence to medication among diabetes patients. Most often it is taken for granted that non-adherence is due to patient-related factors arising

out of his/her own behavior or indifference toward the disease. Health system or treatment-related factors or social factors are also implicated. However, the effect of disease related distress usually goes unnoticed. Distress can bring about a decreased self-care activity, including non-adherence to medication.

Diabetes related distress refers to the unique, often hidden, emotional burden and worries that a patients experience when they are managing a severe chronic disease, such as diabetes. Patients often become anxious about the type of diet they need to take myths about using insulin injections, nutritional contents of foods, foot care, injuries and other critical information.[3] The current study was taken up to study the presence of distress in Type 2 Diabetes Mellitus (T2DM) patients and the impact of distress on adherence to diabetic medications.

MATERIAL AND METHODS

The present study was carried out at Sri Venkateswara Institute Of Medical Sciences (SVIMS) University, a tertiary care teaching hospital at Tirupati during the period January 2018 to April 2018, a duration of four months at the Department Of Endocrinology out patient. The study was approved by Institutional Ethics Committee. Patients who were diagnosed to be diabetic based on the American Diabetic Association (ADA)[4] criteria and currently on follow-up at SVIMS were recruited into the study. Pregnant women, geriatric patients(age>75), patients unwilling to participate in the study and those patients who were suffering from co-morbidities (other than hypertension), like coronary artery

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disease (CAD), chronic kidney disease (CKD), or other chronic diseases likely to affect the health and well being of the patients were excluded from the study. All the patients were recruited after obtaining written informed consent.

Patients were assessed for distress by using Diabetic Distress Screening Scale (DDS),[5,6] which is a 17 point scale which looks into various aspects like emotional burden, regimen related distress, physician related distress and interpersonal distress. There is a total DDS score and a separate score for each of the above components. A score equal to or above 3 was considered as evidence of distress requiring clinical attention.

Patients were assessed for medication adherence by using Morisky (Medication) Adherence Questionnaire(MAQ)[7,8]. A MAQ score < 3 was consider as good adherence while ≥3 was consider as poor adherence. Data regarding the prescription of drugs was collected from the patient case sheet or out-patient card, whereas data pertaining the distress and the medication adherence information by using the DDS Scale and MAQ scale was collected by administering these scales directly.

STATISTICAL ANALYSIS

The collected data were analyzed using SPSS (Statistical Package for Social Sciences) version 16.0 computer software (SPSS, Inc., Chicago, IL, USA) and expressed using descriptive statistics (mean, standard deviation). Independent sample students *t*-test was used to compare means between groups while the chi square test was used to compare proportions between groups. $P < 0.05$ was taken as significant for the above tests.

RESULTS

We assessed 101 patients during the study period; their details are as shown in table.1. Males outnumbered females and all of the patients were married except for one. Forty six (45.54%) patients were below the age of 50 years. Thirty seven patients (36.6%) had hypertension and very few consumed alcohol or smoked.

The mean total DDS score was1.83 ± 0.61; and the scores for each domain were as follows: emotional burden related distress 2.62 ± 1.13; physician related distress 1.25 ± 0.72; regimen related distress 1.94 ± 0.86 and interpersonal distress 1.09 ± 0.33. Only 5 (4.95%) of study population had significant diabetes distress (total DDS ≥ 3) warranting clinical attention. An additional 35 patients had a DDS > 2 but < 3. An equal number of patients had significant physician related distress. However 40.59% of patients (n=41) had clinically relevant emotional burden related distress and 14.85% (n=15) had regimen related distress worthy of clinical attention.

On assessment using the Morisky Adherence Questionnaire, 62 had good adherence to medication while 39 had poor adherence. Table.2 describes the pattern of medication adherence among patients with and without distress. It was observed that none of the 5 patients who had total DDS score ≥ 3 had good adherence to medication (0%) while 62 patients without diabetes distress had good adherence (p=0.007).

Variable	Observation
Age (mean ± std.deviation) in years	51.37 ± 9.68
Gender Male Female	 64 37
Marital status Married Unmarried	 100 1
Occupation Employed House wife Unemployed and others	 67 29 5
Co-morbidities Hypertension Alcohol consumption Smoking	 37 03 06
Table-1: Details of the 101 patients recruited	

Type of distress	Number of patients having the specified form of distress (out of a total of 101 patients)	Proportion (Percentage) of patients who have good adherence to medication (MAQ score < 3) if specified form of distress is present	Proportion (Percentage) of patients who have good adherence to medication (MAQ score < 3) if specified form of distress is absent	P value
Diabetes distress	5	0/5 (0%)	62/96 (64.5%)	0.007
Emotional burden related distress	40	22/40 (55%)	40/61 (65.6%)	0.304
Physician related distress	5	3/5 (60%)	59/96 (61.4%)	1.00
Regimen related distress	15	10/15 (66.7%)	52/86 (60.4%)	0.778
Table-2: Effect of Distress on Medication Adherence				

F2

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Budarapu, et al.   Effect of Distress due to Disease, on Medication Adherence

Section: Psychiatry

Presence or absence of distress due to emotional burden, physician distress and regimen related distress did not affect the medication adherence.

DISCUSSION

In this study, we explored the effect of various domains of diabetes related distress on adherence to diabetic medication. The WHO defines adherence as "the extent to which a person's behavior-taking medication, following a diet, and/or executing lifestyle changes corresponds with agreed recommendations from a healthcare provider".[9] Adherence to medication, is the most important self care activity, which the patients with diabetes have to follow apart from others activities like strict dietary regimen and physical lifestyle to achieve the desired glycemic levels. This requires a steady determination on the part of the patient. The inability of the patient to cope with his/her disease status can, however, affect his/her psychological state of mind which in turn can bring about an adverse health outcome.

In our study only 5% of patients had distress related to diabetes (total DDS≥3) requiring clinical attention. In Kumar N et al the prevalence of same level of diabetes related distress (i.e. total DDS≥3) was 12.3%.[10] However an additional 35% of our patients had a score total DDS score ≥ 2 but < 3 on diabetes distress scale, which has been classified as moderate distress by some authors.[11,12] Taking DDS ≥ 2 as the cutoff to define moderate to severe distress, patients suffering from such distress would be 40% in our study, which is in line with other Indian studies and a Bangladesh study,[10,11,12] which reported 41.9% and 48.5% respectively, using the same cutoff. Emotional distress with which 40% of our study population was suffering with was also noted in another Indian study, which reported it as 69%.[10] Many other studies have also shown the presence of distress and other mood affective disorders among patients with diabetes.[13]

Regimen related distress is an area where the patient feels that he/she is not able to strictly follow his/her treatment regimen. He/she is overwhelmed by the number of medications, injections, and frequent blood glucose monitoring and loses confidence in his/her ability to care for his/her condition. Our study reports 15% of the patients suffering from regimen related distress, which is in line with an Indian study by Kumar N et al.[10]

A few studies from the United States[14,15] have reported a higher medication adherence in patients with lower regimen distress. Likewise, Kumar N showed that the odds for poor adherence were increased by the presence of distress in any domain of the DDS score. However they did not report the odds for poor adherence when the total DDS score was elevated. In our study we have found that none of the 5 patients with diabetes related distress (total DDS score ≥3) had good adherence, whereas 64.5% of the remaining 96 patients without diabetes distress (DDS< 3) were found to be having good adherence (p=0.007).

Limitations

This study was conducted at a single center and convenience sampling strategy was employed. Patients with co-morbidities except for hypertension were excluded from the study. Hba1c levels were not collected as many of them did not get it done, in recent times at the time of the study.

CONCLUSION

Thus to conclude; the presence of diabetes distress is associated with poor adherence to medication. It would be worthwhile to screen patients for the presence of diabetes related distress so that identified patients can be counseled to relieve their distress. Counseling the patient and the family at the time of diagnosis of diabetes, about signs of distress due to disease and its consequences will alert both the parties and bring those patients to point of care before it becomes too late. This would go a long way in improving medication adherence ultimately resulting in better diabetes control and improved outcomes.

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