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Impact of Medication Adherence to patients with Type II Diabetes Mellitus in a tertiary care teaching hospital

Authors
B. Srijan[1*], M. Naufia[1], M. Raveena[1], Syed. Mubasheer Mohiuddin[1]
[1]Department of Clinical Pharmacy, Vaageswari College of Pharmacy, Karimnagar, Telangana, India

Abstract
Introduction: *Non adherence to medication is a common problem in clinical practice, especially among patients with asymptomatic chronic conditions such as diabetes and hypertension. It is a result of complex interaction between the social environment, the patient and health providers. Non adherence to medication declines the efficacy of the medication and, in turn, the glycemic control.*
Aim: *Although poor medication adherence may contribute to inadequate diabetes control, ways to practicable measure adherence in clinical practice have yet to be established. This study was conducted to assess the medication adherence among type II diabetic patients.*
Methods: *A cross sectional, observational study was conducted for a period of 6 months in a tertiary care teaching hospital. Patients diagnosed with type 2 diabetes mellitus taking anti diabetic drugs were enrolled in this study. To assess the medication adherence, 8-item Morisky Medication Adherence Scale (MMAS-8) was used.*
Results: *The medication adherence was assessed in 116 patients. 84 (72.41%) patients have low adherence and 32 (27.58%) patients have medium adherence and none of them has high adherence before the counselling session. After the counselling session on diabetes and adherence to medication did elicit a significant change in adherence levels, i.e.18 (15.51%) patients (of the patients) have reached high adherence, 77 (66.37%) patients (of the patients) have reached medium adherence and 21 (18.10%) patients (of the patients) have low adherence.*
Conclusion: *Improving medication adherence enhances patient safety. It is crucial for the health care professionals to assess the patient and foresee the possible causes of non adherence to achieve best health outcome.*
Keywords: *Medication adherence, Morisky Medication Adherence Scale, Diabetes mellitus, Patient Counselling.*

Introduction

Diabetes is one of the most common chronic disease across the world and the no. of diabetic patients are on the rise. In 2011, there were 366 million people with diabetes globally, and this is expected to rise to 552 million by 2030.[1] Low and middle income countries are the most victimized areas that accounted for 80% of deaths due to diabetes mellitus. The chance of death in type 2 diabetes mellitus from cardiovascular complication is generally three times of the normal individuals.[2,3] Non adherence to medication is a common problem in clinical practice, especially among patients with

asymptomatic chronic conditions such as diabetes and hypertension.[4-7] It is a result of complex interaction between the social environment, the patient and health providers.[8] Non adherence to medication declines the efficacy of the medication and, in turn, the glycemic control.[9] Adherence is referred as active, voluntary and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result.[10-13] Medication adherence to anti diabetic agents has been shown to be more cost effective, as it may reduce hospitalization frequency and costs associated with complications.[14,15]

Aim

Although poor medication adherence may contribute to inadequate diabetes control, ways to practicable measure adherence in clinical practice have yet to be established. This study was conducted to assess the medication adherence among type II diabetic patients attending a tertiary care teaching hospital, Karimnagar, Telangana.

Methods

A cross sectional, observational study was conducted for a period of 6 months in a tertiary care teaching hospital, Karimnagar, Telangana, India. Patients diagnosed with type 2 diabetes mellitus taking anti diabetic drugs and patients who returned for a follow-up visit were included. After taking informed consent, the patient is interviewed. The study excluded, patients with type 1 diabetes, patients using insulin because there is not a feasible method to measure adherence to injectables and patients who did not come for the follow-up visit. Among patients meeting these criteria, a total of 260 patients were enrolled. Out of 260, only 116 patients who came for the follow-up visit were assessed.

To assess the medication adherence, 8-item Morisky Medication Adherence Scale (MMAS-8) was used. The scale is designed to facilitate identification of barriers and behaviors associated with adherence to medication. It is a self report questionnaire with eight items (questions) having good validity and internal reliability. Response categories are yes or no for each item (question) and a typical 5-point Likert response to the last item. Each 'yes' response for each of the first 7 questions is worth 1 point, and a 'no' is worth 0 points. For the final question, a response of 'A' is worth 0 points, and a response of 'B', 'C', 'D', 'E' is worth 1 point. Based upon the responses, each item is scored and total score is calculated. Scores on the MMAS were categorized as: >2 corresponded to low medication adherence, 1 or 2 corresponded to medium medication adherence and a score of 0 corresponded to high medication adherence.[16] Data was analyzed using Microsoft excel 2010 as a statistical tool.

Results

In a total of 260 patients, 157 (60.38%) patients were males and 103 (39.61%) patients were females (Fig.2).

Among 260 patients, 116 (44.61%) were illiterates, 28 (10.76%) were having primary education, 23 (8.84%) were having secondary education and 93 (35.76%) patients were having a tertiary education (Fig 3).

A total of 116 patients came for the follow-up visit out of 260 (Fig 4).

Among 116 patients, 41 (35.34%) were illiterates, 12 (10.34%) were primarily educated, 14 (12.06%) were secondarily educated and 49 (42.24%) were having a tertiary education. Most of the patients who came for the follow-up visit were having tertiary education.

The medication adherence was assessed in 116 patients. 84 (72.41%) patients have low adherence and 32 (27.58%) patients have medium adherence and none of them has high adherence before the counselling session (Table 1). The most common reasons said when interacting with patients were, they forget to take medicines when away from home, difficulty in adhering to medication plan and due to busy work schedules. Some of them stopped taking medication because they believed that their diabetes was under control.

After the counselling session on diabetes and adherence to medication did elicit a significant change in adherence levels, i.e.18 (15.51%) patients (of the patients) have reached high adherence, 77 (66.37%) patients (of the patients) have reached medium adherence and 21 (18.10%) patients (of the patients) have low adherence (Table 2). This low adherence was due to their negligence, lack of financial support and burdensome work schedules.

Figure 1 (A, B, C, D) shows a comparison of adherence levels against the different educational status.

Comparison of medication adherence levels between diabetic patients before and after counseling sessions are enlisted in Table 1, 2 and Fig 5A, 5B.

Table 1: Adherence levels before counselling.

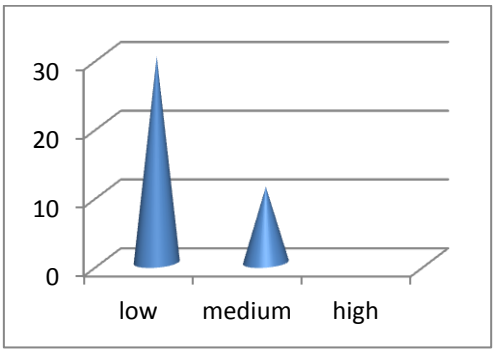
	HIGH ADHERENCE		MEDIUM ADHERENCE		LOW ADHERENCE	
	NO.	%	NO.	%	NO.	%
ILLITERATES	-	-	11	9.48	30	25.86
PRIMARY	-	-	-	-	12	10.34
SECONDARY	-	-	2	1.72	12	10.34
TERTIARY	-	-	19	16.37	30	25.86

Table 2: Adherence levels after counselling.

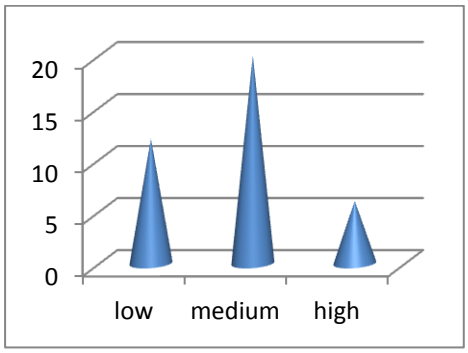
	HIGH ADHERENCE		MEDIUM ADHERENCE		LOW ADHERENCE	
	NO.	%	NO.	%	NO.	%
ILLITERATES	6	5.17	20	17.24	12	10.34
PRIMARY	3	2.58	9	7.75	-	-
SECONDARY	-	-	14	12.06		
TERTIARY	9	7.75	34	29.31	9	7.75

Figure 1: Comparison of adherence levels in patients against educational status.

A) Illiterates

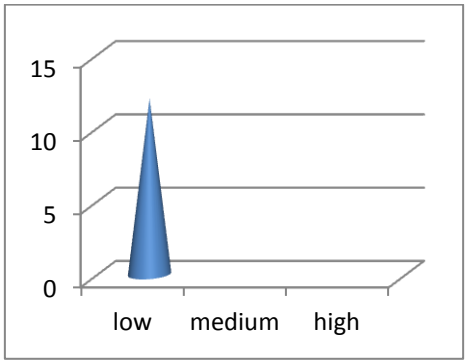


Before Counselling

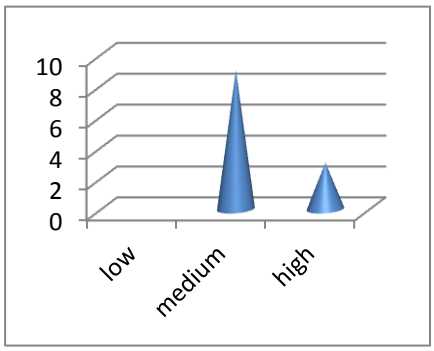


After Counselling

B) Primary

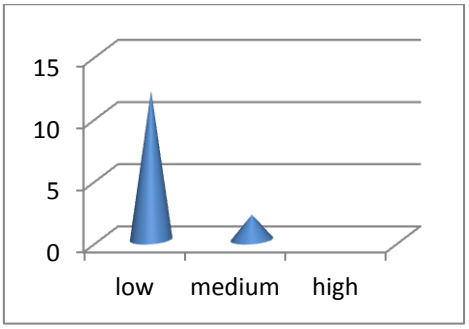


Before Counselling

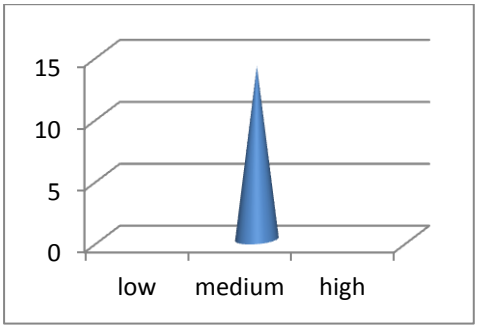


After Counselling

C) Secondary

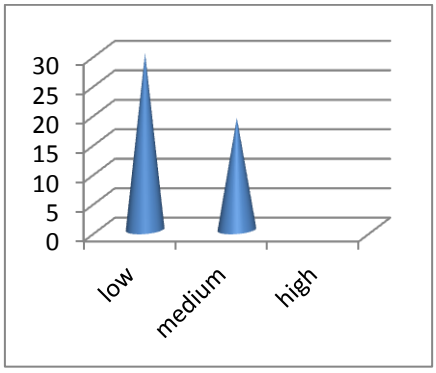


Before Counselling

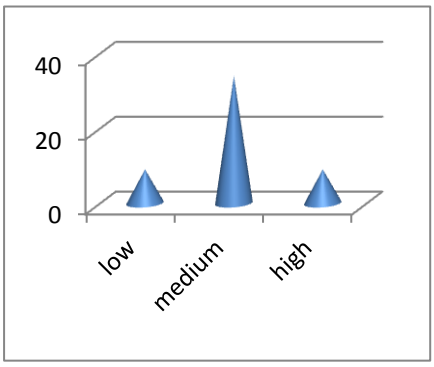


After Counselling

D) Tertiary



Before Counselling



After Counselling

Figure 2: Gender wise distribution of patients.

Figure 3: Percentage of patient's educational status in first visit.

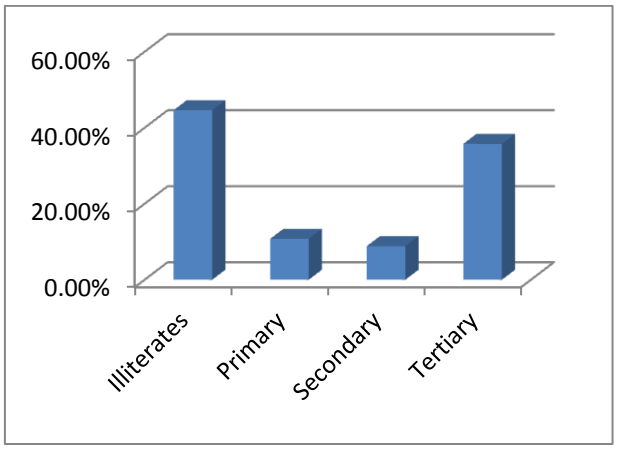


Figure 4: No. of visits by the patients.

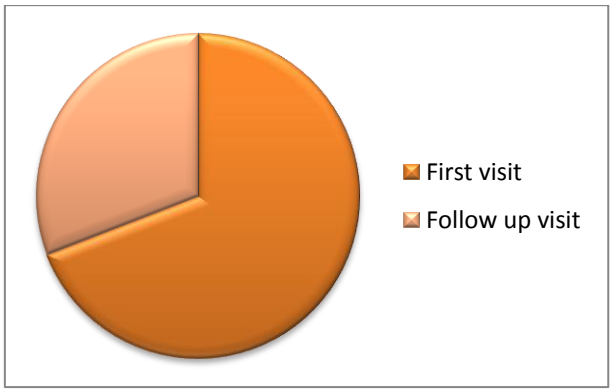


Figure 5: A) Comparison of adherence levels before counselling.

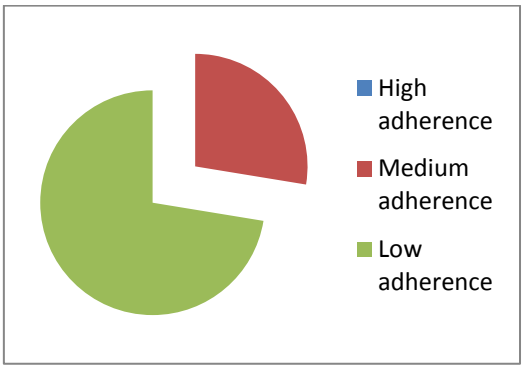
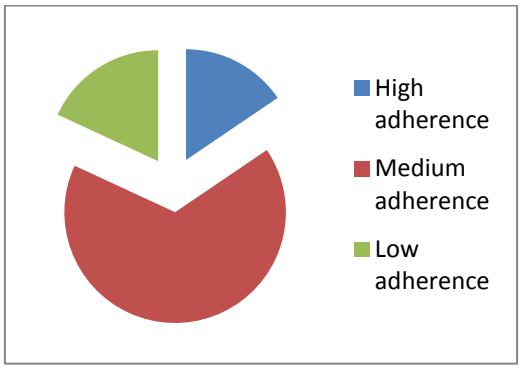


Figure 5: B) Comparision of adherence levels after counselling.



Discussion

The findings of this study revealed that medication adherence was low. Worldwide studies using various research assessment instruments and systematic reviews have addressed issues of poor medication adherence among diabetic patients.[17-19] It was observed that many patients forgot to take medicines with them when they are away from home. Others felt that it was very difficult to adhere to treatment plans and so stopped the medications. The findings are compared to several studies documented as poor medication adherence in diabetic patients.[20-23] Study conducted by Shaimol et al[21] reported that 21.8% of the patients showed high adherence, 43.3% moderate adherence, and 35.3% low adherence to the therapy. Priyanka et al[24] documented that the majority had high medication adherence. Majority of diabetics had positive beliefs about the necessity of their medication and this may have resulted in high adherence. Arulmozhi and Mahalakshmy[25] reported that 49.8% were high, 24.7% were moderate, and 26% low adherent. This better medication adherence probably could be explained by increased awareness about diabetes mellitus and its complications among the population. Sre Akshaya Kalyani[26] reported that 76 (36.53%) patients were found to be with medium adherence, 68 (32.69%) patients with high adherence, and 64 (25.09%) patients with low adherence.

Adherence could be affected by patient-centric, physician-dependent, or health care establishment factors. Physicians can play a major role in improving medication adherence by increasing interaction with patients. The physician-patient relationship plays a major role in keeping the patient well informed about the medications they consume. Patient adherence when the treatment is simple seems effective. If they believe the benefits exceed costs and their environment supports regimen-related behaviors, their medication adherence improves.[27]

Conclusion

Improving medication adherence enhances patient safety. It is crucial for the health care professionals to assess the patient and foresee the possible causes of non adherence to achieve best health outcome. In addition to several other factors affecting medication adherence, clinical pharmacist and other health care professionals should pay attention to provide knowledge about diabetes that the patients carry towards medication adherence.

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Declarations

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Ethical approval: Not required

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