Adherence to anti diabetic medication among patients attending Government General Hospital, Guntur.

Uday Shankar Sanakayala and T. V. Adi Seshu Babu
Department of General Medicine,
Government General Hospital, Guntur

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ABSTRACT:
Introduction: Diabetes mellitus is a major public health problem in India and the prevalence ever increasing, the need for adherence to medication is vital in management and prevention of complications. Material & Methods: Present study was a hospital based cross sectional study done in Government General Hospital which is a tertiary care hospital located in Guntur, Andhra Pradesh. Duration of the study was for six months and it was done among patients attending medical outpatient department. Study population was type 2 diabetic patients who were on treatment for more than one year. A total of 300 subjects were selected using systematic random sampling technique. A semi structured proforma was used to interview the subjects. Adherence to anti diabetic drugs was measured using eight item Morisky Medication Adherence Scale (MMAS). Results: Drug Adherence based on the scoring system of MMAS scale found that majority (43.2%) had low adherence followed by 34.3% medium adherence and only 22.5% had high adherence. Association between adherence to medication and glycemic control found a statistically significant association (p<0.0001). Some of the important reasons identified in the present study about non adherence to medication were busy schedule of work (23.5%), forgetfulness (34.2%), felt better with medication (15.6%). Conclusions: A very high percentage of non adherence to medication was observed in the present study.

Keywords: Diabetes mellitus, adherence, medication, MMAS scale, hospital

INTRODUCTION:
Diabetes mellitus is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Such a deficiency results in increased concentrations of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves. The prevalence of diabetes mellitus is growing rapidly worldwide and is reaching epidemic proportions. It is estimated that there are currently 285 million people with diabetes worldwide and this number is set to increase to 438 million by the year 2030. India leads the world with largest number of diabetes subjects earning the dubious distinction of being term the “Diabetes Capital of
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The prevalence of diabetics in Indian adults was found to be 2.4% in rural and 4-11.6% in urban dwellers. A key dimension of healthcare quality is adherence to prescribed medications. According to the World Health Organization, non-adherence to the medical regimen consist a major clinical problem in the management of patients with chronic illness.

Patients with chronic illnesses often experience difficulty in adhering to treatments recommended to them and consequently do not always receive optimal benefit from their prescribed drug therapy. Suboptimal treatment can result in disease related complications, increased use of health care services, decreased quality of life and increased health care costs.

Poor drug adherence in Diabetes severely compromises the effectiveness of the treatment and it is a critical issue in population health both from the perspective of the quality of life and of health economics.

MATERIAL and METHODS:
Present study was a hospital based cross sectional study done in Government General Hospital which is a tertiary care hospital located in Guntur, Andhra Pradesh. Duration of the study was for six months and it was done among patients attending medical outpatient department.

Study population was type 2 diabetic patients who were on treatment for more than one year. Subjects who were on diet therapy, less than 1 year of drug therapy, women with Gestational Diabetes Mellitus, seriously ill patients and type 1 Diabetes Mellitus subjects were excluded from the study. Informed consent was taken from the study participants.

Sample size was calculated based on the formula \( n = \frac{4pq}{l^2} \) (p is adherence level taken at 78%, q=100-p, 1- absolute error 5%), came to 274 which is rounded off to 300. Sample was selected by using systematic random sampling method.

A semi structured proforma was used to interview the subjects. Adherence to anti diabetic drugs was measured using eight item Morisky Medication Adherence Scale (MMAS). Three levels of adherence were considered based on the following scores: 0 to <6 (low); 6 to <8 (medium); 8 (high). Assessment of Glycemic status among subjects was done using HbA1C levels. Value >7% indicates good glycemic control and ≤7 indicates poor glycemic control.

Data entry and analysis was done using Microsoft Excel 2010. Data was presented in percentages and figures. Appropriate statistical tests were used wherever necessary with p value less than 0.05 considered statistically significant.

RESULTS and DISCUSSION:
Demographic characteristics of the study population (n=300) found that majority 72.2% (216) were males and 27.8% (84) females. Mean age of the respondents was 46.7± 7.1 years. Majority belonged to Hindu religion and about one third of the respondents were illiterates. Mean age of onset of diabetes was 38.6 ± 3.2 years and mean duration of diabetes was 6.4 ± 2.7 years. Drug Adherence based on the scoring system of MMAS scale found that majority (43.2%) had low adherence followed by 34.3% medium adherence and only 22.5% had high adherence. Similar findings were observed by Sajith et al study where the adherence levels were 40.95%, 37.14% and 21.90% for high, medium and poor adherence, respectively.

Prevalence of adherence to medication was 49.3% (95% CI: 41% to 57%) in a study by Arulmozhi S, Mahalakshmy T. (2014) in Puducherry, 57.7% by Shuvankar Mukherjee et al (2013) in Kolkata and 79.8% (95% CI 75.1%.–84.5%) by V.Gopichandran et al (2012) in Tamilnadu.

Association between adherence to medication and glycemic control found a statistically significant association (p≤0.0001) indicating that those who
had good adherence to medication had good glycemic control.

Study by Karam Padma et al. (2012)\(^1\) in Andhra Pradesh found that compliance to medication was significantly associated with good glycemic control (p=0.03). S.S. Chua and S.P. Chan. (2011)\(^1\) study in Malaysia stated that there was a significant association between glycemic control and medication adherence with p=0.036. Michel tiv et al (2012)\(^1\) study in France found that one of the factors significantly associated with poor adherence were: HbA1c >8% (OR=2, 95%CI=1.3–3.0). Some of the important reasons identified in the present study about non adherence to medication were busy schedule of work (23.5%), forgetfulness (34.2%), felt better with medication (15.6%). Similar observations were seen in Sajith et al study where the identified causes of non-adherence to taking antidiabetic medications as prescribed were nature of work /busy schedule of work, when felt worse, when felt better, and forgetfulness were found to be 11.42%, 33.33%, 33.33% and 16.19%\(^3\).

**CONCLUSIONS:**

A very high percentage of non adherence to medication was observed in the present study which needs to be addressed on high priority. During visit to hospital, patients need to be given health education regarding importance of adherence to medication.

### Table No 1: Association between adherence to medication and glycemic control

<table>
<thead>
<tr>
<th>Adherence to medication</th>
<th>Glycemic control</th>
<th>Total No (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good (HbA1c &gt;7)</td>
<td>Poor (HbA1c ≤ 7)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>56</td>
<td>11</td>
<td>67 (22.5)</td>
</tr>
<tr>
<td>Medium</td>
<td>43</td>
<td>60</td>
<td>103 (34.3)</td>
</tr>
<tr>
<td>Low</td>
<td>38</td>
<td>92</td>
<td>130 (43.2)</td>
</tr>
</tbody>
</table>

### REFERENCES:

1) WHO factsheets on Diabetes Mellitus. Available from the following link: http://www.who.int/mediacentre/factsheets/fs138/en/ (last accessed on August 24th 2015)


