

Medication Adherence to Oral Hypoglycemic Agents in Type 2 Diabetic Patients

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ABSTRACT

Main objective of this study was to determine the adherence of patients towards the use of OHA. This cross-sectional study was conducted at a tertiary care hospital in Kerala. Duration of the study was 6 months. The consent of the selected patients was collected in the Performa. Relevant data were extracted and recorded using appropriate data collection form. Interviews were conducted using structured questionnaire. Patient adherence calculated based on the scores of Morisky Medication Adherence Scale. Analysis of the results were done by using software SPSS, version 11.0. As per current study majority of the patients showed medium adherence towards OHA use. The study described significant relation between age and medication adherence of the patient. In this study females showed higher adherence than males. Marital status specified that married population showed high adherence comparing to unmarried group. Current study specifies no relation between place of residence and adherence. The study states that when education of the patient increases, medication adherence also increases. Study described that low income patients were less adherent to the prescribed therapy than high income patients. The patients with onset of diabetes at younger age were shown more adherences to treatment than aged group. The study does not found any significant correlation between number of drugs used and medication adherence. Adherence was very important in effective medical care. Pharmacists were in a unique position to improve medication adherence.

Keywords: Medication adherence, cross sectional, morisky medication adherence scale

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INTRODUCTION

Diabetes is a major and growing health care problem in India [1,2]. When anti diabetic drug therapy is indicated metabolic control depends on adherence to both non-pharmacological and pharmacological treatment [3-5]. Greater adherence to medical regimens would be associated with better metabolic control [6]. Poor adherence to recognized standards of care is the principal cause of development of complications of diabetes. Drug utilization studies identify treatment adherence problems or reasons for non-adherence, thus drug utilization studies are interventions to improve drug use [7]. A main objective of this study was to determine the adherence of patients towards the use of OHA. The study was

carried out in patients receive OHA in type 2 diabetes in the Outpatient Pharmacy and Diabetic Clinic of a tertiary care Hospital. Rationale behind the study that in this study setting diabetic patients was far more compared to other morbid conditions. Many of them belong to poor socio-economic background. Adherence interventions are more useful for patients with DM. In this setting there were no published clinical studies describing the medication adherence towards OHA in type 2 diabetic patients. As a clinical pharmacist it is our responsibility to understand the compliance of diabetic patients regarding the use of drugs.

MATERIALS AND METHODS

Study population included all the type 2 diabetic patients reported to Diabetic clinic and Outpatient Pharmacy of a tertiary care hospital in Kerala during the study period. Total 400 patients were enrolled for the study. It was a cross-sectional study. Study period was 6 months after obtained clearance from the Human Ethical Committee. Inclusion criteria specified that all the patients with established type 2 diabetes, Patients of either gender with type II diabetes and on medications, Type 2 diabetic patients administering OHA only, Patients who were given their written

consent etc. Exclusion criteria for the current study was patients who were taking insulin, Patients with other co morbidities along with type 2 diabetes, Patients who were not willing to give written consent. Firstly the consent of the selected patients was collected. Relevant data were extracted and recorded from prescriptions using appropriate data collection form. Patients were interviewed using structured questionnaire. Patient adherence calculated based on the scores of Morisky Medication Adherence Scale. Analysis of results done by using software SPSS, version 11.0.

RESULTS

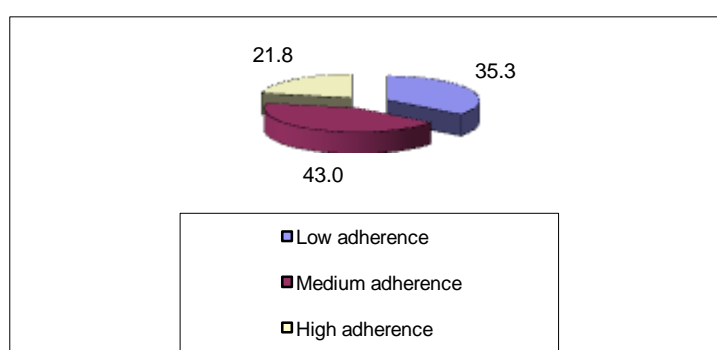


Figure 1: Distribution of patients according to Medication Adherence

Table 1: Comparison of sex based on adherence

Sex	Low adherence		Medium adherence		High adherence		χ^2	P
	Count	Percent	Count	Percent	Count	Percent		
Male	40	33.1	52	43.0	29	24.0	0.63	0.730
Female	101	36.2	120	43.0	58	20.8		

Table 2: Comparison of age based on adherence

Age	Low adherence		Medium adherence		High adherence	
	Count	Percent	Count	Percent	Count	Percent
<40	0	0.0	15	35.7	27	64.3
40 - 49	5	6.0	51	60.7	28	33.3
50 - 59	39	27.9	79	56.4	22	15.7
60 - 69	68	66.0	25	24.3	10	9.7
70 - 79	29	93.5	2	6.5	0	0.0
Mean \pm SD	61.9 \pm 8.1		51.1 \pm 8.8		45.4 \pm 11.9	

Table 3: Comparison of marital status based on adherence

Marital status	Low adherence		Medium adherence		High adherence		χ^2	P
	Count	Percent	Count	Percent	Count	Percent		
Married	141	37.4	167	44.3	69	18.3	47**	0.000
Unmarried	0	0.0	5	21.7	18	78.3		

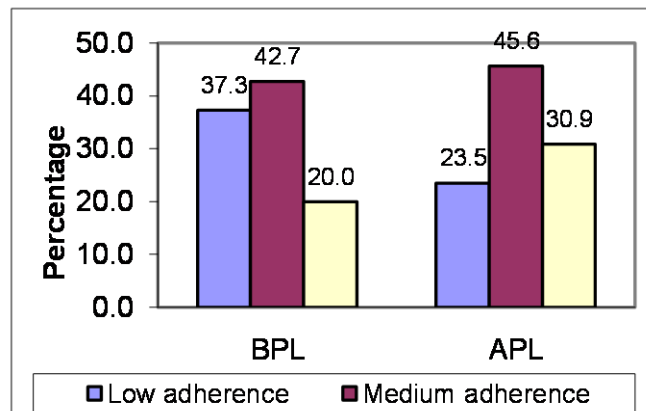
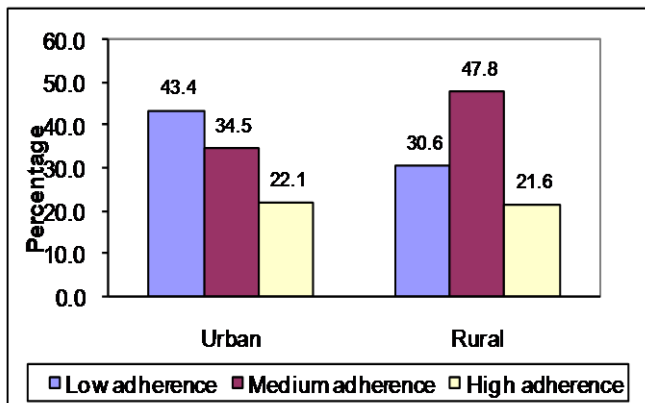


Figure 2 and 3: Comparison of income based on adherence

Table 4: Comparison of education based on adherence

Education	Low adherence		Medium adherence		High adherence		χ^2	P
	Count	Percent	Count	Percent	Count	Percent		
Below matriculation	122	68.9	37	20.9	18	10.2	241.65**	0.000
Under graduation	16	9.4	124	72.9	30	17.6		
Graduation	3	5.7	11	20.8	39	73.6		

Table 5: Comparison of onset of diabetes based on adherence

Onset of diabetes	Low adherence		Medium adherence		High adherence	
	Count	Percent	Count	Percent	Count	Percent
20 - 29	0	0.0	3	23.1	10	76.9
30 - 39	2	4.9	20	48.8	19	46.3
40 - 49	15	12.7	75	63.6	28	23.7
50 - 59	74	46.0	63	39.1	24	14.9
60 - 69	50	74.6	11	16.4	6	9.0
Mean \pm SD	55.8 \pm 6.2		47.5 \pm 7.6		42.6 \pm 10.5	

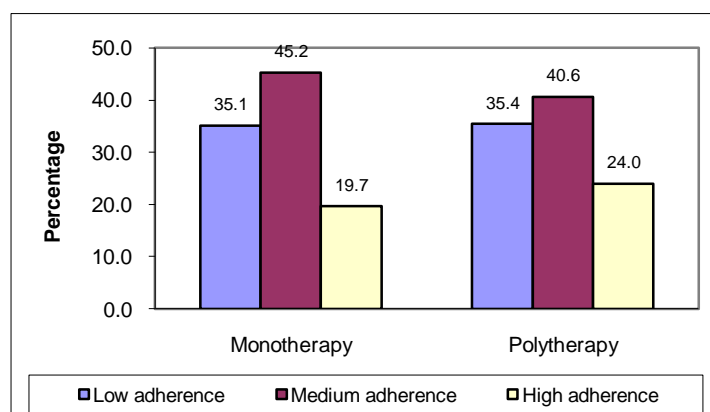


Figure 4: Comparison of number of drugs based on adherence

DISCUSSION

PATIENT MEDICATION ADHERENCE TOWARDS OHA

Morisky Medication Adherence Scale (MMAS) was used to study patient medication adherence. *Phei Ching LIM et al* [8] and *Nicole Rae Yurgin et al* [9] conducted studies using this scale. Out of the total 400 patients majority of them had shown medium adherence toward OHA therapy. 35.3% of patients were shown low adherence and only 21.8% of patients were shown high adherence towards the therapy (**figure 1**). It was similar to the results published in a study conducted by *Carlos A Prado-Aguilar et al* [10] and *Geok H. Yeo et al* [11].

Gender: (**Table 1**), described that males (24%) showed more adherence than females (20.8%). ($P = 0.730 < 0.01$) indicates that there was no significant relation between gender and medication adherence. The result was opposite to the findings of *Rasaq Adisa et al* [12]. He found that 18% of male patients were adherent to the therapy and 30% of female patients showed adherence. This contrast result may be due to the fact that in our cultural set up females were more bound to family and does not take enough time for their own well being. It may lead to low adherence to the therapy.

Age: From (**table 2**), it was clear that age less than 40 shows higher adherence (64.3%) with OHA therapy. When the age of the patient increased, medication adherence decreased. Finally the age group in the range of 70-79, showed very poor adherence towards the use of OHA. Here ($p = 0.000$), $0.000 < 0.01$. As per statistical analysis, there was significant relation between age of the patient and medication adherence. It may be due to the reason that when age increases people suffer with various co-morbid conditions along with diabetes and need to take large number of medications, finally leads to non-adherence.

Marital status: From the study population (**table 3**), the unmarried group (78.3%) showed higher adherence compared to married group (18.3%). Here $p = 0.000 < 0.01$, found significance difference between marital status and medication adherence. This was in contrast to a study

performed by *Rasaq Adisa et al* [12] in South Western Nigeria. His study specified that none of the unmarried population showed adherence and 47.1% of married group showed adherence towards prescribed therapy. The variation in the results may point out to the different races and culture that the patients belong to.

Residence: When comparing residing area and medication adherence, both the groups were showed similar response for adherence. $P = 0.017$, by correlating residence of patients and medication adherence found no significant relation (**figure 2**).

Income: (**Figure 3**), shows that 20.9% of patients under BPL category shown high adherence and 30.9% of patients under APL category. Here $p = 0.045 < 0.05$, found significant difference between income of patients and adherence. The low adherence of BPL patients may be due to the cost of medicines purchased from outside pharmacy, or they were unable to continue the follow up for the treatment due to various economic reasons.

Education: By comparing educational status and medication adherence, patients with below matriculation level of education showed low adherence compared to undergraduate and graduate population. Out of these three categories patients with graduation or above showed higher adherence towards therapy. The reason may be due to when educational level improves, population knows better about health and they may update the knowledge regarding drugs, disease states and needs to be compliant. ($P = 0.000 < 0.01$). Statistical analysis shown that there was significant relation between educational status and patient medication adherence (**table 4**).

Onset of diabetes: (**Table 5**), shows patients with onset of diabetes in the range of 20-29 years shown high adherence (76.9%) comparing to other category. Here when age onset of diabetes increased, adherence rate decreased and age group in the range of 60-69 had shown 9% of high adherence. Here $p = 0.000 < 0.01$. By analysing the data there was significant relation between these two. The study suggests that the onset of diabetes at younger age were showed more adherences

to treatment than older age. The reason may be due to the younger population were more health conscious and they may update the knowledge regarding drugs, disease states and needs to be compliant.

Number of drugs based on adherence: (Figure 4), shows that 19.7% of patients showed high adherence (monotherapy) and 24% of patients showed higher adherence (polytherapy). Here $p = 0.518 > 0.000$. This indicates that there was no significant relation between number of drugs and patient adherence in the study. This finding was similar to that of study conducted by Nicole Rae Yurgin *et al* [9] and Carlos A Prado-Aguilar *et al* [10].

CONCLUSION

To get satisfactory results, Morisky Medication Adherence Scale was used in the study. While discussing the patient medication adherence towards OHA use, majority of the patients showed medium adherence. Only fewer patients were shown high adherence. While comparing age of the patients with adherence, patients with age less than 40 shows high adherence. When age of the patient increases, medication adherence decreases. Finally patients in the range of 70-79 age groups showed very poor adherence. The study described significant relation between age and medication adherence of the patients. Comparing to females, males showed higher adherence and does not found any statistical significance. Marital status specified that married population showed high adherence comparing to unmarried group. Statistical analysis interpret that there exists significant difference between marital status and adherence. Patients were residing at rural or urban areas were shown more or less similar adherence towards the therapy. Current study specified no relation between place of residence and adherence. The study states that when education of the patient increases, medication adherence also increases and statistically significant. Low income patients were less adherent to the prescribed therapy than high income patients and showed statistically significant. The onset of diabetes at younger age was shown more adherences to treatment than

elders and found statistically significant. The study does not found any correlation between number of drugs and medication adherence.

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