Journal of Cardiovascular Disease Research

ISSN:0975-3583,0976-2833 VOL12,ISSUE05,2021

ASSESSMENT OF MEDICATION ADHERENCE IN TYPE 2 DIABETES MELLITUS PATIENTS

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ABSTRACT

This is a Prospective observational study where we go and collect the details of type 2 diabetes patients from tertiary care hospital (Manipal) and attend the camp in community area of Mangalagiri regarding patient details, past medical and medication history, lab details, treatment and evaluation of medication adherence and complications which is carried out for 6 months. The present study consists of sample size 1600. Out of 1600 sample 400 are from tertiary care and 1200 people are from community. In tertiary care out of 400; males were high in that 55-65 age group mostly effected. Highest number of patients observed with 2 comorbidities. Highest number of patients observed with no social habits and patients with social habits more are habituate to both alcohol and tobacco in these people observed with low adherence. Highest number of patients are observed with positive family history. In this study most of diabetic patients were suffering with neuropathy complication and a smaller number of patients suffering with diabetic foot. Highest number of patients following mixed diet. More number of patients using biguanides and sulfonyl urea's for controlling diabetes. Highest number of patients observed in rural are. Working people are more effected than retired population. In this study a greater number of patients suffering with DM in the last 5-15 years. In community area out of 1200; males were high in that 55-65 age group mostly effected. Highest number of patients observed with 0 comorbidities. Highest number of patients following mixed diet. Highest number of patients observed in rural are. Working people are more effected than retired people. In this study more no. of patients was suffering with DM 5-15years. In our study we found the factors that influencing medication adherence they are; include age, comorbidities, social history, family history, occupation and duration of diabetes. There is no correlation between gender and found poor correlation for diet and location and good correlation for age, comorbidities, social history, family history, occupation and duration of diabetes.

Keywords: Diabetes mellitus, medication adherence, MMAS-8(morisky medication adherence scale)

INTRODUCTION:

Diabetes is broadly of two types- Type 1 and Type 2 diabetes mellitus (DM) with also some new variants like LADA (Latent Autoimmune Diabetes of adulthood),Gestational and secondary diabetes[1] Type 2 Diabetes Mellitus was the fourth leading cause of death globally based upon the report by the International Diabetes Federation2. Diabetes mellitus is a major health problem in aged people now a days due to impaired carbohydrate metabolism, protein, and fat due to unstable insulin secretion, insulin resistance secretion, or both[3,4]. The majority of patients who are having diabetes most are suffering with type 2 diabetes mellitus[5,6]. Studies reveals that prevalence of poor adherence to treatment regimens like medication[7], diet, exercise etc. Adherence measured by several ways, but using questionaries and scales is easier to measure[15.] Finally Improving adherence towards medication help to reduce cost and improving care for chronic illness patients[16].

METHODOLOGY

Study design:

It is a Prospective observational study where we go and collect the details of type 2 diabetes patients from tertiary care hospital(Manipal) and attend the camp in community area of Mangalagiri regarding patient details, past medical and medication history, lab details, treatment and evaluation of medication adherence and complications.

study site and duration of the study:

- Study duration 6 months.

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- Number of Sites – Dual sites (community area Mangalagiri and Manipal hospital).
- Duration of study participation for the subject-24-48hours.
- Total number of subjects 1600 samples (400 Tertiary care+ 1200 Community area Mangalagiri) were included in our study those who are suffering with type 2 Diabetes.

Our study was followed both criteria's.

Inclusion Criteria

- Geriatrics(≥55yrs) and non-geriatrics (30-55) patients being participated into the study site.
- Patients of both genders being participated to the study site.

Exclusion Criteria:

- Type 1DM patients
- Pregnant women's

Study material

All the relevant data were collected from patient case record by using data collection form.

Study procedure:

- After obtaining informed consent from the patient baseline parameters (age, gender, social status, economic status, and diagnosis and drug usage) were obtained by using a suitable data collection form.
- Subjects who are having type II DM are enrolled in our study. In this study we are assessing medication adherence by using MMAS-8 questionary form.
- The study was divided into tertiary care hospital and community area Mangalagiri. We are collecting diabetic patient's demography data, blood glucose levels and MMAS 8 score were obtained by MMAS-8 questionnaire for specialized formulations (annexure).
- After obtaining of MMAS-8 score, compare the adherence and complications in diabetic patients in community area and tertiary care hospital.

RESULTS AND DISCUSSION:

1.AGE AND GENDER:

	TERTIARY CARE (N=400)						COMMUNITY AREA (N=1200)					
	MALE			FEMALE			MALE			FEMALE		
	L	M	H	L	M	H	L	M	H	L	M	H
35-45	1	16	19	2	16	18	44	41	21	38	50	14
45-55	3	29	28	2	21	30	71	99	25	65	96	18
55-65	5	44	34	3	22	25	57	94	41	89	82	31
65-75	2	26	21	3	11	8	38	45	12	32	47	11
≥75	0	3	5	0	2	1	5	11	2	9	10	2

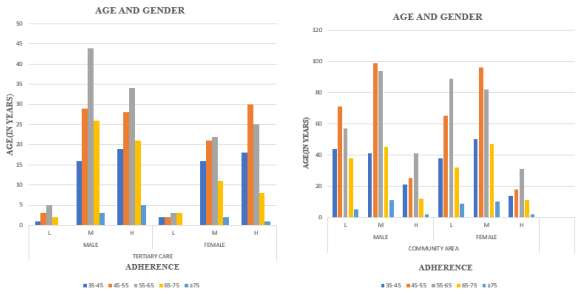

Table1;describes age and gender distribution in diabetic population, it reveals that the highest number of the patient was observed in people with age group of 55-65 years in that males are high. Males are low adhering to medications when comparing to females. Lowest numbers of patients observed in age group ≥75 years in both tertiary care and community area.

2.NO. OF COMORBIDITIES:

NO. OF COMORBIDITIES	TERTIARY CARE (N=400)						COMMUNITY AREA (N=1200)					
	MALE			FEMALE			MALE			FEMALE		
	L	M	H	L	M	H	L	M	H	L	M	H
0	0	0	0	0	0	0	123	146	72	113	130	63
1	7	36	45	3	22	34	54	83	17	76	94	8
2	3	45	42	1	36	36	38	61	12	44	61	5
3	1	25	13	4	12	8	0	0	0	0	0	0
MORE THAN 3	0	12	7	2	2	4	0	0	0	0	0	0

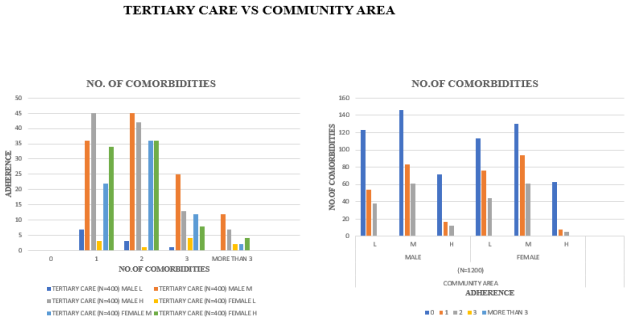

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Table 2;reveals no. of comorbidities, it reveals that highest no of patients are having more than 2 complications. Patients who are having 2 complications in that males are more effected than female in tertiary care but in community area highest number of patients are having 0 comorbidities. Less no patients observed with more than 3 complications, in those males are more effected when compared to females in both tertiary and community area.

3.SOCIAL HISTORY:

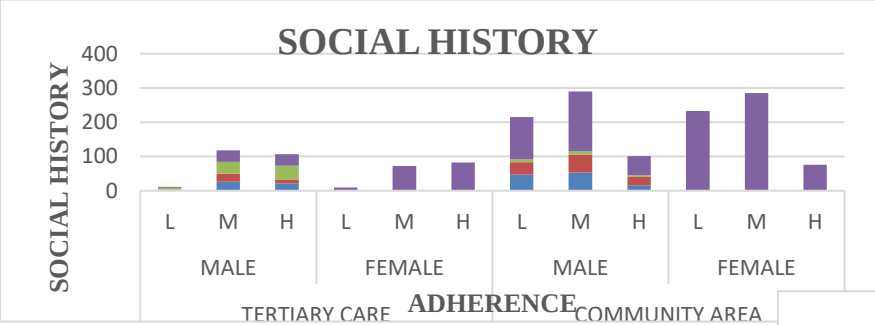

Table 3 describes social history of diabetic population; it reveals that males are addicted to social habits like alcohol and smoking. The people who are having both social habits are having low adherence.

4. FAMILY HISTORY:

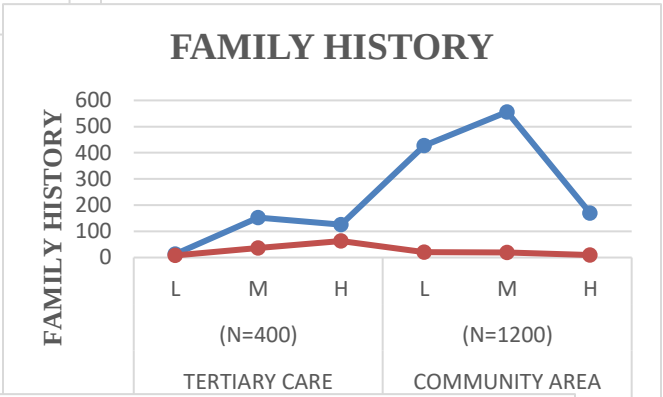

Table 4;describes family history of diabetic population; it reveals that patients who are having positive family history are more effected that to more in male patients. When compared male and female low adherence more observed in males.

5.COMPLICATIONS

COMPLICATIONS	TERTIARY CARE		COMMUNITY AREA	
	MALE	FEMALE	MALE	FEMALE
NEUROPATHY	72	74	67	52
NEPHROPATHY	10	12	39	59
RETINOPATHY	39	25	89	107
DIABETIC FOOT	9	3	20	22
CAD	80	10	131	109
CVA	56	32	10	10

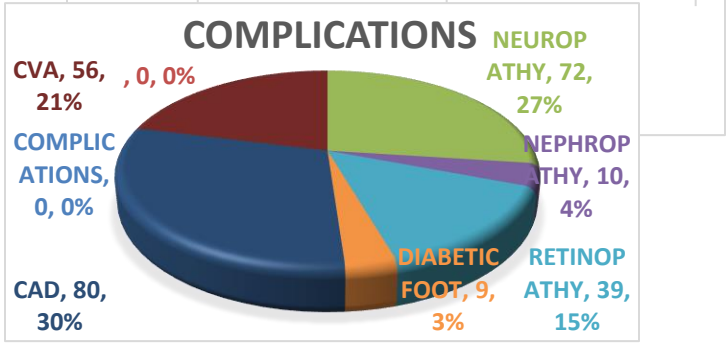

Table 5 describes complications in diabetic patients, in that we observed that neuropathy is the most common complication in diabetic patients. The people who are having neuropathy males are more effected. Less common complication in diabetic complication is diabetic foot ulcer.

6.DIET:

DIET	TERTIARY CARE (N=400)						COMMUNITY AREA (N=1200)					
	MALE			FEMALE			MALE			FEMALE		
	L	M	H	L	M	H	L	M	H	L	M	H
VEG	1	11	15	0	14	10	7	35	5	10	46	13
MIXED	10	107	92	10	58	72	208	255	96	223	239	63
TOTAL	11	118	107	10	72	82	215	290	101	233	285	76

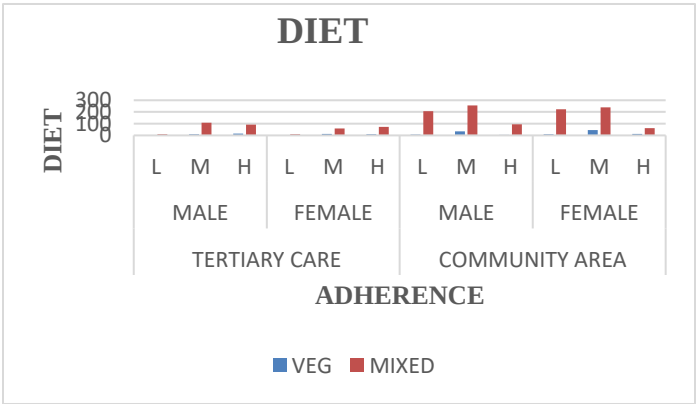

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Table 6 describes diet or food habits in diabetic population, it reveals that most of patients following mixed diet. The people who are following only veg observed with high adherence. The people who are following mixed diet observed with low adherence.

7. DRUG UTILIZATION:

DRUG UTILIZATION	TERTIARY CARE		COMMUNITY AREA	
	M	F	M	F
BIGUANIDES	236	164	580	588
SULFONYLUREAS	128	112	580	588
THIAZOLIDINEDIONES	23	9	135	124
DPP IV INHIBITORS	13	12	0	0
A GLUCOSIDASE INHIBITORS	17	8	0	0
SGLT 2 INHIBITORS	0	3	0	0

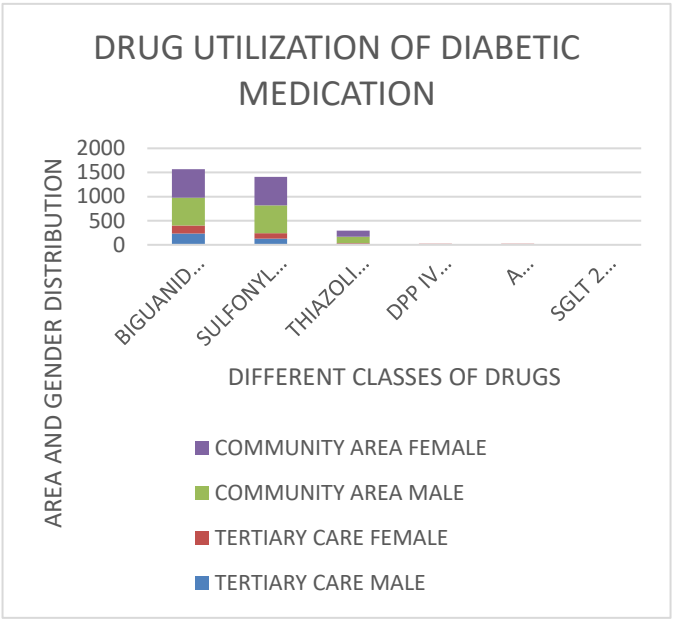

Table 7 describes diabetic drug utilization in diabetic population, it reveals that most of patients using biguanides and sulfonyl urea's, very few members are using SGLT inhibitors that to with combination of biguanides and sulfonyl urea's in tertiary care and community area.

8. DRUG THERAPY OF DIABETES MEDICATION:

TYPE OF THERPAY	TERTIARY CARE		COMMUNITY AREA	
	MALE	FEMALE	MALE	FEMALE
MONO THERAPY	57	28	15	12
DUAL THERAPY	86	69	394	402
TRIPLE THERAPY	70	45	195	181
QUARTER	18	18	0	0
MORE THAN QUARTER	5	4	0	0

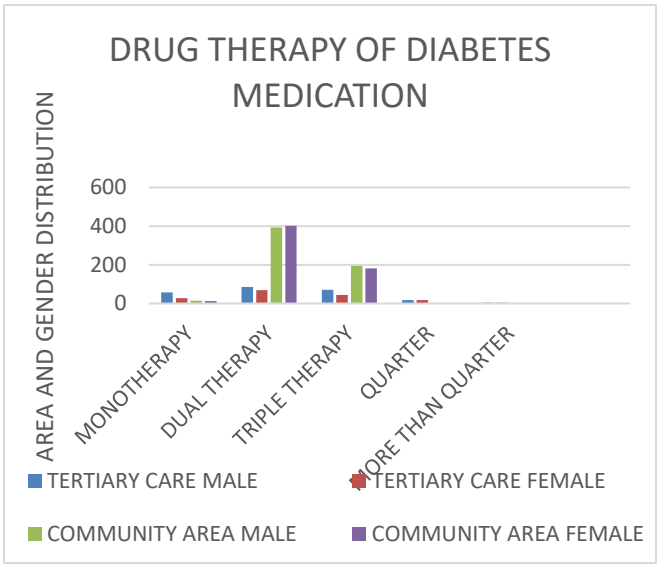

Table 8 describes drug therapy of diabetic medication in diabetic population, most of patients suggested with dual therapy and less no of people suggested with more than 4 drugs in both tertiary care and community area.

9.LOCATION:

DURATION OF DM	TERTIARY CARE (N=400)						COMMUNITY AREA (N=1200)					
	MALE			FEMALE			MALE			FEMALE		
	L	M	H	L	M	H	L	M	H	L	M	H
<5	5	46	38	4	22	33	6	7	0	5	9	3
5-15	4	49	42	3	30	35	148	202	67	149	189	49
15-25	1	19	23	2	12	11	58	79	34	76	83	24
>25	1	4	4	1	8	3	3	2	0	3	4	0

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Table 9 describes location of diabetic population; most of patients living in rural are in that males are more effected in tertiary care and community area.

10.OCCUPATION

OCCUPATION	TERTIARY CARE (N=400)						COMMUNITY AREA (N= 1200)					
	MALE			FEMALE			MALE			FEMALE		
	L	M	H	L	M	H	L	M	H	L	M	H
WORKING	9	65	70	7	9	11	158	212	69	42	43	20
RETIRED	2	53	37	1	5	9	56	78	32	6	5	2
HOUSEWIFE	0	0	0	2	58	62	0	0	0	185	237	54

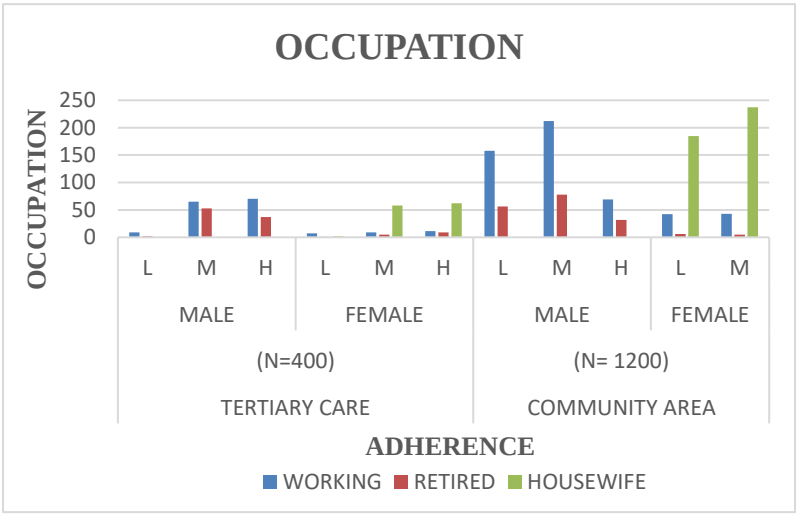

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Table 10 describes occupational status of diabetic patients; working men are more effected than other people.

11.DURATION OF DIABETES

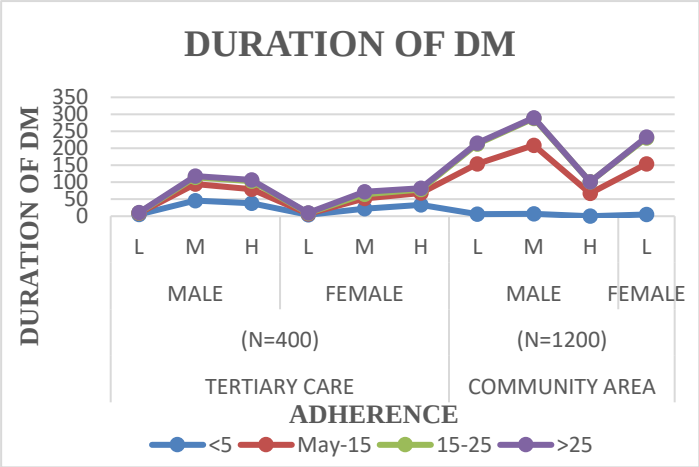

Table 11 describes duration of diabetes; most of people suffering for 5-15 years in that male are affected more than female in both tertiary care and community area.

FACTORS INFLENCING MEDICATION ADHERENCE

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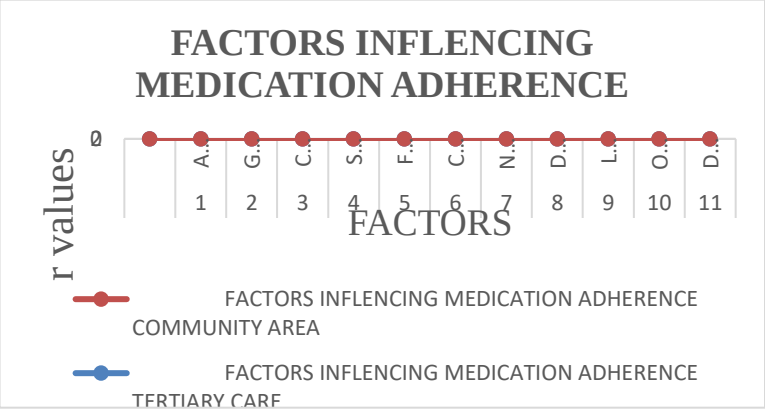
S.NO	FACTOR INFLUENCING ADHERENCE	TERTIARY CARE r value	COMMUNITY AREA r value
1.	AGE	0.72	0.68
2.	GENDER	0.10	0.00
3.	COMORBIDITIES	0.78	0.89
4.	SOCIAL HISTORY	O.82	0.92
5.	FAMILY HISTORY	0.76	0.85
6.	COMPLICATIONS	0.86	0.76
7.	NO. OF COMPLICATIONS	0.85	0.65
8.	DIET	0.41	0.21
9.	LOCATION	0.41	0.23
10.	OCCUPATION	0.68	0.78
11.	DURATION OF DM	0.79	0.67



The study results involved different factors that influencing medication adherence in diabetic patients. In that we found correlation between factors and medication adherence. The r values of factors in tertiary care Vs community are like this age(0.72Vs0.68), gender(0.10Vs0.00), comorbidities (0.78Vs 0.89), social history (0.82Vs 0.92), family history (0.76Vs 0.85), complications (0.86 Vs 0.76), No. of complications (0.85Vs 0.65), Diet (0.41 Vs 0.21), location (0.41 Vs 0.23), occupation (0.68Vs 0.78) and duration of DM (0.79Vs 0.67)

DISCUSSION

The present study consists of sample size 1600. Out of 1600 sample 400 are from tertiary care and 1200 people are from community. In tertiary care out of 400; males were high (236) in that 55-65 age group (83) mostly effected. Highest number of patients observed with 2 comorbidities (30.75%). Highest number of patients observed with no social habits and patients with social habits more are habituate to both (20%) alcohol and tobacco in these people observed with low adherence. Highest number of patients are observed with positive family history (64%). In this study most of diabetic patients were suffering with neuropathy complication (36.5%) and a smaller number of patients suffering with diabetic foot (3%). Highest number of patients following mixed diet (87.25%). More number of patients using biguanides and sulfonyl urea's (Dual therapy) for controlling diabetes. Highest number of patients observed in rural area (54.25%). Working people (42.75%) are more effected than retired population (26.75%). In this study a greater number of patients suffering with DM in the last 5-15 years (40.75%).

More number of patients using biguanides and sulfonyl urea's (Dual therapy) for controlling diabetes. Highest number of patients observed in rural area (81.75%). Working people (45.33%) are more effected than retired people (14.91%). In this study more no. of patients was suffering with DM 5-15years (67%).

CONCLUSION:

In our study we found the factors that influencing medication adherence they are; include age, comorbidities, social history, family history, occupation and duration of diabetes. There is no correlation between gender and found poor correlation for diet and location and good correlation for age, comorbidities, social history, family history, occupation and duration of diabetes. In any health care sector that may be tertiary care or community people have to properly adhere to their treatment regimens; so that we can prevent potential complications and improve the health and quality of life of the patient.

Conflicts of interest: All the authors are equally contributed the work. Authors are not having any conflicts of interest.

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