Original Article

Predictors of Poor Adherence to Anti-diabetic Therapy in Diabetics: A Cross-Sectional Study in Hazara Division

Poor Drug Compliance To Anti-Diabetic Therapy

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ABSTRACT

Objective: To determine the factors responsible for poor drug compliance to anti-diabetic therapy among diabetic patients.

Study Design: Cross-Section Study

Place and Duration of Study: This study was conducted at the Ayub Teaching Complex, Abbottabad from April 2022 to July 2022.

Materials and Methods: In Patients and outpatient who were already diagnosed with type 1 and type 2 diabetes were included in study. Newly diagnosed, pregnant females, Unconscious, terminally ill patients and patients with mental and physical disabilities were excluded from study. Non probability purposive sampling technique was applied for data collection. The data was analyzed in SPSS version 21.

Results: In present study 277 diabetic patients were recruited from different medical units. The mean age of the sample was recorded as 58.2 ±12. Fifty percent were male and 49.8 % were female. Majority of patients (58%) belong too urban areas. Most of the patients (55%) were uneducated and 74.5% were dependent on their families. Overall, 44.4% have underlying different comorbidities. Hypertension was the most common comorbidity recorded. 90 patients (32.4%) were noncompliant to anti-diabetic therapy. The most frequent reason for noncompliance was financial constrains among diabetic patients.

Conclusion: We have concluded that the comorbidity is devastatingly high in group with non-adherent to anti diabetic medicines. Most common reason for non-compliances is financial constraints. Easily availability of anti-diabetics and procurement by government increases compliance in diabetic individuals. Educations of diabetic individuals especially who are taking medicine in injectable or combination can improve overall compliance to anti-diabetics.

Key Words: words: non-compliance, anti-diabetic drugs, comorbidity

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INTRODUCTION

Drug compliance has always been a problem for diseases that are lifelong, and this fact is particularly true for diabetes mellitus. Even in well developed countries, the drug adherence percentage in diabetic patients is as low as 61 %[1]. It is an established fact that hyperglycemia is directly linked to long term micro and macro-vascular complications related to diabetes mellitus. A good glycemic control can prevent or at least delay these complications. Ensuring good adherence to drug therapy is one of the important ways to achieve good glycemic control. Data on noncompliance to drug therapy in diabetic patients is scanty[2,3,4]. The percentage varies from 9 to 80 %, depending upon how non-adherence to medicine and study population selected is defined.

As we see in general practice, noncompliance to drug therapy is quite common in type 2 diabetics in our country and a few studies published in the literature support this fact. Since no such kind of study is available in our area, therefore we designed the present study to check prevalence and to evaluate medication adherence in people with type 2 diabetes, and to identify the risk factors for poor adherence, especially those which are modifiable.

MATERIALS AND METHODS

A questionnaire based cross sectional study was conducted between 20 May2022 to 20 August 2022 on diabetic patients at Ayub teaching hospital, Abbottabad. Non convenience purposive sampling technique was

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applied for data collection. Previously diagnosed cases of diabetes mellitus attending the outdoor department and admitted in different clinical units were included in study. Newly diagnosed, pregnant females, Unconscious, terminally ill patients and patients with mental and physical disabilities were excluded from study. All the socio-demographic information and factors pertaining to non-adherence to anti-diabetic drugs will be recorded on a self-designed questionnaire through interview by trained health workers. For continuous variable mean and standard deviation calculated while for categorical variables percentages and frequencies were calculate. The p value less than 0.05 were taken as significant. The data will be entered in SPSS system version 21 and then will be analyzed to prepare results.

The institutional ethical committee approved the study with approval code/Ref.No.RC-2022/EA-01/077. Witten consent was also signed before data collection from patients and informed the patient about value of research, confidentiality of their statement and their right to withdraw from study.

RESULTS

About 520 patients were enrolled in present study, among which only 277 meet the inclusive criteria (n=277). The mean age of cohort was 58.2% ± 12. Almost half of them were male (50.2%) and other half were females (49.8%).

Table No.1: showing relationship of compliance with different variables.

Variables		No of poor comp-liance (32%)	Significance	Variables		No of poor comp-liance (32%)	Significance
Gender	Male	47	0.70	Procurement	Self	84	0.00
	Female	43			Government	05	
Occupation	Nothing	22	0.03		Other	01	
	Office job	07		Distance Travelled	<5Km	61	0.03
	Manual work	12			5-10	13	
	House work	39			11-15	04	
	Refused	10			16-30	05	
Education	Uneducated	55	0.56		>31	03	
	Primary	15		Nature of drug	Insulin	19	0.06
	Secondary	12			OHA*	61	
	Graduation	06			Both	10	
	Post-graduation	02		Duration of diabetes	1 month-5years	29	0.94
Diabetes	Type1	04	0.158		5-10years	29	
	Type2	86			10-20years	28	
Mode of Earning	Self	20	0.25		>20years	04	
	Dependent	70		Monthly income	5000-20,000	33	0.013
No. of family Members	1-3	06	0.60		21,000-30,000	22	
	4-6	23			31,000-50,000	19	
	7-10	40			51,000-1 lack	11	
	11-15	13		Comorbidities	Yes	74	0.000
	16-20	06			No	16	
	>20	02					

Table No.2 Factors of poor compliance in diabatic patients

Reasons for poor compliance	No (Percentages) Total=90	P value
Financial constraints	22(24%)	0.000
Forgot fullness	15(17%)	0.000
Feeling of well being	11(12%)	0.000
Limited belief	10(11%)	0.000
Frequent side effect	09(10%)	0.000
Other reasons	09(10%)	0.000
Too many medicine	05(06%)	0.003
Busy with work	04(04%)	0.011
Availability issues	04(04%)	0.011
Disappointment	01(01%)	0.325

Fifty eight percent (116) were uneducated and 18% had primary level of education. Most of patients, 58% residing in urban locations, 42% were performed usual house chores and 28% were do nothing— either they were jobless or retired. Majority of patients 74% were dependent on their families. Overall, 44.4% have comorbidities. After hypertension (44.7%), chronic heart disease (37%) is common co morbidity recorded, detail Shown in table 1.

The mean systolic blood pressure was recorded as 132±16 and mean diastolic blood pressure was recorded as 83±10. Almost 90 patients (32%) were not complaint to their medications. The most common reason was financial constraints detail shown in table 2.

Logistic regression analysis in Table 03 showed that the risk of noncompliance to anti diabetic therapy is highest among group with large duration of diabetes, low education group and group with low income. The odds ratio (OR) consanguinity decreases with increase in education and income, while the OR increase with increase in duration of diabetes but 95% CI was not significant.

Table No.3: Logistic regression analysis

Variables	Odds ratio	Confidence interval 95%	
		lower	upper
Duration of diabetes			
5-10years	1.6	0.39	7.2
10-20years	2.3	0.52	10.2
>20years	2.7	0.64	11.83
Education			
Primary	4.2	0.4	43.8
Secondary	2.8	0.27	30.7
Graduation	2.1	0.18	24.5
Post-graduation	1.9	0.17	22.8
Income			
5000-20,000	0.1	0.027	1.39
21,000-30,000	0.3	0.046	2.5
31,000-50,000	0.3	0.43	2.47
51,000-1 lac	0.5	0.058	4.48

DISCUSSION

Diabetes is a chronic disease with which patient have to live. Good glycemic control prevents the patient from end organ damage; therefore, it is necessary for diabetics to strictly adhere with anti-diabetic regime to prevent complication.

In current study we have accessed frequency of poor compliance and factors responsible for non-adherence. Our data suggest that 32% diabetic individuals are non-adherent to their medication. The figure is quite low as previously reported by Ikram Y et al[5] (a study carried out at Faisalabad) and Shams N et al[6] (a study executed at Islamabad). The result varies due to difference in age group, our sample population was older than reported by Ikram Y and Shams et al. the studies have proven that compliance rates are high in older ages[7,8,9]. Another reason for low threshold of non-compliance could be the duration of Disease. Most of over patient have duration of diabetes greater than 10 years will other regional studies. Drug adherence increases with increase in diabetic duration [7,10]. A study done in India also enlisted poor financial status is major risk factors for poor compliance[11]. 82% (74/90) non-compliant patient have significant high underlying comorbidities as compare to good adherent patients. Hypertension is commonest comorbidity over all recorded in diabetics which is consistent with Ahmad NS et al[12].

The most common reason for noncompliance was financial constraints, which validate according to country circumstances, increasing poverty and economical instabilities. The fact of financial constraints can be supported by procurement of medications. In non-compliant group 93% (84/90) significantly self-financed their medication while in good compliance group majority (64%) was supported by government authorities. Patients with good compliance significantly travelled short distance as compared to the patient with good compliance group. Forgetfulness is second most common reason for non-compliance, a study done in Ghana[13] reported forgetfulness as the top most reason for non-adherence, discrepancy could be due to difference in Scio demographical and socio-economical parameters. Moreover, the study in Ghana recruited only diabetic patients using oral agent while our patients used multi nature medicines. The significant high rate of underlying comorbidity could be the reason for forgetfulness. There was also marginal significance difference in type of medication use by diabetic's individuals. Individuals using only oral hypoglycemic have good compliance as compared to individuals who use injectable or combinations.

When regression analysis was applied it was observed that compliance increase with increasing literacy of individuals and financial status of individuals which is accordance to study done in Faisalabad[5].

CONCLUSION

We have concluded that the comorbidity is devastatingly high in group with non-adherent to anti diabetic medicines. Most common reason for non-compliances is financial constraints. Easily availability of anti-diabetics and procurement by government increases compliance in diabetic individuals. Educations of diabetic individuals especially who are taking medicine in injectable or combination can improve overall compliance to anti-diabetics.

Government and health policy makers should take steps by arranging diabetic care model to educate the patients in community and policy makers should reduce the cost of medication to achieve higher level of adherence to medications in diabetic group.

Author's Contribution:

Concept & Design of Study:	Abdul Rauf
Drafting:	Junaid Khan. Gul Nawaz
Data Analysis:	Mohsin Khan, Nighat Jamal
Revisiting Critically:	Faiza khan
Final Approval of version:	Abdul Rauf

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Tiv M, Viel JF, Mauny F, Eschwege E, Weill A, Fournier C, Fagot-Campagna A, Penfornis A. Medication adherence in type 2 diabetes: the ENTRED study 2007, a French population-based study. PloS One 2012; 7(3):e32412.
2. Cramer JA. A systematic review of adherence with medications for diabetes. Diabetes Care 2004;27(5):1218-24.
3. Dailey G, Kim MS, Lian JF. Patient compliance and persistence with anti-hyperglycemic therapy: evaluation of a population of type 2 diabetic patients. J Int Med Res 2002;30(1):71-9.
4. Srinivas G, Suresh E, Jagadeesan M, Amalraj E, Datta M. Treatment Seeking Behavior and Compliance of Diabetic Patients in a Rural Area of South India. Annals of the New York Academy Sci 2002;958(1):420-4.
5. Ikram Y, Ahmed MM, Tariq M, Jabeen F, Tariq I, Usman M. Factors Associated with Non-Adherence among Type-2 Diabetes Mellitus Patients: Results from Primary Care Clinics in Faisalabad Pakistan. Pak J Med Health Sciences 2022;16(03):377-.
6. Shams N, Amjad S, Kumar N, Ahmed W, Saleem F. Drug Non-Adherence In Type 2 Diabetes Mellitus; Predictors And Associations. J Ayub Med Coll Abbottabad: JAMC 2016;28(2):302-7.
7. Mohamed HA, Al-Kohji SM, El-Din Makhlouf MM, Osman SO, Al-Kuwari MG. Factors Associated with Glycemic Control among Type 2 Diabetic Patients Attending Primary Health Care Centers in Qatar, a Cross-Sectional Study. J Community Med Public Health 2020;4(183):2577-228.
8. Krueger K, Botermann L, Schorr SG, Griese-Mammen N, Laufs U, Schulz M. Age-related medication adherence in patients with chronic heart failure: a systematic literature review. Int J Cardiol 2015;184:728-35.
9. Aminde LN, Tindong M, Ngwasiri CA, Aminde JA, Njim T, Fondong AA, Takah NF. Adherence to antidiabetic medication and factors associated with non-adherence among patients with type-2 diabetes mellitus in two regional hospitals in Cameroon. BMC Endocrine Disorders 2019;19(1):1-9.
10. Elsous A, Radwan M, Al-Sharif H, Abu Mustafa A. Medications adherence and associated factors among patients with type 2 diabetes mellitus in the Gaza Strip, Palestine. Frontiers Endocrinol 2017; 8:100.
11. MuKherjee S, SharMaSarKar B, DaS KK, Bhattacharyya A, Deb A. Compliance to anti-diabetic drugs: observations from the diabetic clinic of a medical college in kolkata, India. J Clin Diagnostic Res : JCDR 2013;7(4):661.
12. Ahmad NS, Ramli A, Islahudin F, Paraidathathu T. Medication adherence in patients with type 2 diabetes mellitus treated at primary health clinics in Malaysia. Patient Preference Adherence 2013; 7:525.
13. Sefah IA, Okotah A, Afriyie DK, Amponsah SK. Adherence to oral hypoglycemic drugs among type 2 diabetic patients in a resource-poor setting. Int J Applied Basic Med Res 2020;10(2):102.