British Journal of Pharmaceutical and Medical Research Vol.03, Issue 05, Pg.1176-1183, Sept-October 2018

Available Online at http://www.bjpmr.org

BRITISH JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

Cross Ref DOI : https://doi.org/10.24942/bjpmr.2018.316 Volume 03, Issue 05 Sept-October 2018

ISSN:2456-9836
ICV: 60.37

Research Article

A Study On Factors Affecting Drug Compliance To Antidiabetic Treatment Among Adults In A Tertiary Care Hospital

Dr.R Ratheesh[1] , Dr. Bindu Mohandas[2], Dr. A K Sarada[3], Dr. Bhaskaran[4]

[1]Assistant Professor, Dept. of Pharmacology, KMCT Medical College, Kerala.
[2] Associate Professor, Dept. of Community Medicine, KMCT Medical College, Kerala.
[3]Prof & HoD, Dept. of Community Medicine, Kannur Medical College, Kerala.
[4]Former Prof & HoD, Dept. of Pharmacology, Kannur Medical College, Kerala.

ARTICLE INFO

Article History:
Received on 10th Sept, 2018
Peer Reviewed on 27th Sept 2018
Revised on 18th October, 2018
Published on 27th October, 2018

Keywords:
Diabeties mellitus, patient compliance , treatment

ABSTRACT

Background: Diabetes mellitus is one of the major non-communicable and fastest growing public health problems in the world. Diabetes requires multifactorial and systematic management. Despite the availability of increasingly modern and effective methods of treatment at least half of the patients fail to achieve satisfactory therapy goals. . Non-compliance is believed to be the most common cause of treatment failures which has not been fully investigated. This study is an attempt to find the compliance rate of the patients with type 2 diabetes to the prescribed medications, to find out its association with different socio-demographic factors and to find out the reasons behind the non-compliance, if any.

Materials and Methods: A hospital based cross sectional study was conducted in Kannur Medical College, Anjarakandy; over 2 weeks in January 2014 covering 70 patients. Convenient sampling was done to recruit participants into our study. Each participant was interviewed using a predesigned, pretested, structured questionnaire. The data was analysed using SPSS version 20. Chi square test was applied to find the association between drug compliance with different socio demographic variables and patient characteristics. A p-value of <0.05 was considered to be statistically significant.

Results: 58.57% were males while 41.43% were females. 34.28% were diabetic for less than five years and that 27.1% had diabetes for 6-10 years, 24.28% had diabetes for 11-15 years and 14.28% had diabetes for more than fifteen years. 92.85% and 80% of the study participants had followed the prescribed diet plan and the exercise schedule respectively. 60% of them were having divided meals and 40% of them had single large meal. 91.43% of the study participants had either adequate or some knowledge about the complications of diabetes, while only 8.57% had no knowledge about these. The compliance rate to the anti-diabetic drugs was found to be 64.2%, while 35.8% were non-compliant. Among the participants reported with non compliance, the most common cause for non compliance was that they were very busy with the work followed by financial constraints, forgetfulness, too many medicines to have, and its side effects. 7.1% of them were trying alternative system of medicine also. The compliance to drugs was significantly higher in individuals who were educated and who were following a diet modification and exercise. Drug compliance was significantly lower among patients with diabetes for 10 years and above.

Conclusion: Compliance to the drug therapy of diabetes is variable and associated with education, diet and exercise.

Br J Phar Med Res Copyright©2018, **Dr.R Ratheesh** et al. This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0/), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material for any purpose, even commercially, provided the original work is properly cited and states its license.

INTRODUCTION:

Diabetes mellitus is one of the major non-communicable and fastest growing public health problems in the world, is a condition difficult to treat and expensive to manage. It has been estimated that the number of diabetes sufferers in the world will double from the current value of about 190 million to 325 million during the next 25 years.[1,2,3] Diabetes requires multifactorial and systematic management aimed not only to control metabolic abnormalities but first of all to prevent or delay the complications. Despite the availability of increasingly modern and effective methods of treatment at least half of the patients fail to achieve satisfactory therapy goals, which lead to accelerated development of cardiovascular complications and increased risk of death. Non-compliance is believed to be the most common cause of treatment failures. In diabetes, similarly to the other chronic illnesses, this problem affects a considerable percentage of patients.[4,5,6] It has been demonstrated that only about 50% of T2DM patients comply with long-term treatment, while about 20% do not buy the medication prescribed by their doctors. Non-compliance leads to the lack of metabolic control, which contributes to the development and acceleration of diabetic complications. It is also the cause of adverse reactions to antidiabetic medication.[7,8] As a consequence, it not only reduces the quality of life but increases the risk of death.[8,9] Non-compliance among T2DM patients has not been fully investigated. The studies so far have generally evaluated compliance and its effects on metabolic control of diabetes, while factors affecting compliance have been analysed less frequently.[10,11,12] It has been shown in clinical practice that patients have difficulty in taking the prescribed medications, following a diet and changing their lifestyle as directed by a multidisciplinary team. It is estimated that only a third of patients have adequate treatment adherence.[1,5,13] Several studies investigating adherence to chronic disease treatment have evidenced that patients often discontinue their medications or even do not take them at all because they consider them ineffective or experience untoward side effects.[9,14,15] Among diabetes patients, many believe they do not need any drug therapies as they have no symptoms.[16,17]

In the light of the above findings, the present study was conducted in the outpatient department of general medicine of a medical college hospital in Kannur, Kerala with the aim of studying the compliance rate of the patients with type 2 diabetes to the prescribed medications, to find out its association with different socio-demographic factors and to find out the reasons behind the non-compliance, if any.

MATERIALS AND METHODS

A hospital based cross sectional study was conducted in Kannur Medical College, Anjarakandy; over 2 weeks in January 2014 covering 70 patients. The study protocol was approved by institutional ethics committee and informed consent was obtained from all the study participants who were patients suffered from type2 diabetes mellitus and had attended Medicine outpatient department of this institution during the study period. Convenient sampling was done to recruit participants into our study. Patients with type2 diabetes mellitus of at least six months duration following the initial diagnosis, patients aged 30 and above, who were non pregnant and non lactating (for female patients), who had HbA_1C level tested recently were included in the study. Each participant was interviewed using a predesigned, pretested, structured questionnaire which consists of socio demographic details, specific questions on duration of diabetes, diet, type of medications prescribed, exercise schedule and the compliance to antidiabetic drugs. Patients who were prescribed antidiabetic medications, diet modifications and exercise, but who did not follow these were considered as non-compliant.

The data was analysed using SPSS version 20. Chi square test was applied to find the association between drug compliance with different socio demographic variables and patient characteristics. A p-value of <0.05 was considered to be statistically significant.

RESULTS

The mean age of the study participants was 58.65 (SD 20.75) years. Among them, 58.57% were males while 41.43% were females. 24.28% were graduates while 48.57% had secondary school education, 14.28% had high school education and 12.85% had primary school education. 87.15% were married, while 12.85% were single. 35.71% had a monthly per capita family income of less than Rs. 2000, while 64.29% had a monthly per capita income of Rs. 2000 and above (Table 1).

Table 1: Socio-demographic characteristics of study participants

Characteristics	Number (n=70)	Percentage (%)
Age in years		
<45	25	35.71
>45	45	64.28
Sex		
Male	41	58.57
Female	29	41.43
Education		
Graduate	17	24.28
Secondary school	34	48.57
High school	10	14.28
Primary	9	12.85
Marital status		
Married	61	87.15
Single	9	12.85
Per capita monthly income (Rs)		
<2000	25	35.71
>2000	45	64.29

Regarding the other patient characteristics, it was found that 34.28% were diabetic for less than five years and that 27.1% had diabetes for 6-10 years, 24.28% had diabetes for 11-15 years and 14.28% had diabetes for more than fifteen years. At the time of the present study, 60% were prescribed on oral hypoglycaemic agents (OHA) alone, 14.29% were on insulin alone and 25.71% were prescribed both OHA and insulin. 15.71% had HbA_1C levels >7, 42.85% had between 6-6.9 and 41.43% had HbA_1C level <6 (Table 2).

Table 2: Antidiabetic treatment related characteristics of study participants

Characteristics	Number (n=70)	Percentage (%)
Followed exercise		
Yes	56	80
No	14	20
Followed diet modification		
Yes	65	92.85
No	5	7.15
Type of treatment		
OHA	42	60
Insulin	10	14.29
OHA + Insulin	18	25.71
Duration of diabetes in years		
1-5	24	34.28
6-10	19	27.1
11-15	17	24.28
>15	10	14.29
Knowledge on complications of diabetes		
Yes	64	91.43
No	6	8.57
Compliance to drug therapy		
Yes	40	64.2
No	30	35.8

92.85% and 80% of the study participants had followed the prescribed diet plan and the exercise schedule respectively. Though majority of the study participants followed diet plan, 8.5% participants skipped their breakfast. 71.4% were aware that high fat food will lead to complications and restricted them in their diet.77.1% of the study participants avoided fried items and 12.8% avoided rice completely and instead of rice they consumed wheat and ragi liberally. 78.57% of the participants avoided sweets completely and 25.71%of them used jaggery instead of sugar. Only 55.71% had an idea that they can take fruits in moderation. 58.65% of them told that bitter vegetables will not help in reducing blood sugar levels. 72.8% of the study participants included more amount of vegetables in their diet especially salads. 60% of them were having divided meals and 40% of them had single large meal. 27.1% were consuming alcohol and among that 12.8% of them restricted intake of alcohol after being diabetic. 91.43% of the study participants had either adequate or some knowledge about the complications of diabetes, while only 8.57% had no knowledge about these.

The compliance rate to the anti-diabetic drugs was found to be 64.2%, while 35.8% were non-compliant. Among the participants reported with non compliance, the most common cause for non compliance was that they were very busy with the work followed by financial constraints, forgetfulness, too many medicines to have, and its side effects. 7.1% of them were trying alternative system of medicine also.

The compliance to drugs was significantly higher in individuals who were educated (p=0.0007) and who were following a diet modification (p=0.0319) and exercise (p=0.0001). Drug compliance was significantly lower among patients with diabetes for 10 years and above (p=0.0006). Association between various demographic factors, patient treatment characteristics and drug compliance is as observed in Table 3.

Table 3: Association of compliance to antidiabetic drug therapy with patient characteristics

Patient characteristics	Compliant with drugs	Non compliant with drugs	X^2 and p-value
Age			
<45	25	10	1.556
>45	20	15	0.2123
Sex			
Male	25	16	0.472
Female	20	9	0.4919
Education			
Graduate	11	6	16.8081
Secondary school	28	6	0.0007
High school	5	5	
Primary	1	8	
Marital status			
Married	40	21	0.045
Single	5	4	0.8314
Monthly income			
<2000	15	10	0.088
>2000	30	15	0.7661
Duration of diabetes in years			
1-5	21	3	17.1039
6-10	14	5	0.00067
11-15	8	9	
>15	2	8	
Type of medication			
OHA	27	15	1.6731
OHA + Insulin	10	8	0.4332
Insulin	8	2	
Diet modification			
Followed	44	21	4.5997
Not followed	1	4	0.03198
Followed exercise			
Yes	43	13	19.0556
No	2	12	0.0001

DISCUSSION

The present study was an attempt to find out the compliance rate of patients with type 2 diabetes to the prescribed medications and to find out its association with different socio demographic factors. The compliance to the drug therapy of diabetes is variable and also patient non compliance to the prescribed medicines could decrease the treatment effectiveness.[13,14,15] In the present study the compliance rate was found to be 64.2%. This was higher than that reported by Shuvankar et al which was 57.7%.[18] In a systematic review of adherence with medications for diabetes by Cramer JA showed that compliance to antidiabetic management ranged from 35-95%.[15]

In the present study compliance to antidiabetic drug therapy was significant in individuals who were educated and was following diet modification and exercise. Shuvankar Mukherjee et al also found a significant association between drug compliance with education, diet modification and exercise.[18]

In our study 92.8% and 80% of the study participants followed the prescribed diet plan and exercise schedule respectively. This was much higher when compared with the findings of Shuvankar et al where only 36.4% and 27% of the study participants followed the prescribed diet plan and exercise schedule respectively.[18] Also, Shobhana R et al in their study observed that 37% compliance with diet and 19% compliance with exercise which was very less when compared with our findings.[19]

The most common reason behind the non compliance to drug therapy was participants busy in work followed by financial constraints and forgetfulness in the present study. Shuvankar et al in their study reported the most common reason for non compliance was forgetfulness followed by financial constraints.[18]

The key to eat with diabetes is to eat a variety of healthy foods from all food groups in the amounts your meal plan outlines. Eat foods with heart healthy fats and limit foods and drinks like fried foods, foods high in salt, sweets, beverages with added sugars and alcohol.[20] In the present study, 92.85% and 80% of the study participants had followed the prescribed diet plan and the exercise schedule respectively. 71.4% were aware that high fat food will lead to complications and restricted them in their diet. 78.57% of the participants avoided sweets completely. 72.8% of the study participants included more amount of vegetables in their diet especially salads. 27.1% were consuming alcohol and among that 12.8% of them restricted intake of alcohol after being diabetic.

The present study has some limitations. It was a hospital based cross sectional study and the study used a subjective method, based on patient's answers to assess compliance. Little attention has been paid to patients' perceived understanding of their illness and medication. Insight into their perception rather than the expectations and perceptions of the health care professionals may have relevance for understanding non compliance to medication in a better manner. In future, a community based research can be done to discuss the extent of non compliance.

REFERENCES

1. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: Estimates for the year 2000 and projections for 2030. Diabetes Care. 2004;27:1047–53.
2. Giugliano D, Esposito K. Mediterranean diet and metabolic diseases. Curr Opin Lipidol. 2008;19:63–8.
3. Martinez-Gonzalez MA, de la Fuente-Arrillaga C, Nunez-Cordoba JM, Basterra-Gortari FJ, Beunza JJ, Vazquez Z, et al. Adherence to Mediterranean diet and risk of developing diabetes: Prospective cohort study. BMJ. 2008;336:1348–51.
4. Wild S, Roglic G, Green A. et al. Global prevalence of diabetes, estimates for the year and projections for 2030. Diabetes Care 2004; 27: 1047–1053.
5. Jacek K, Agnieszka G, Jozef D. Type 2 diabetic patients compliance with drug therapy and glycaemic control. Diabetologia Doświadczalna i Kliniczna 2007, 7, 4, 199–203
6. Kardas P. The DIACOM study on effect of dosing frequency of oral antidiabetic agents on the

compliance and biochemical control of type 2 diabetes. Diabetes Obes Metab 2005; 7:722–728.
7. Ryden L, Standl E, Bartnik M. et al. Guidelines on diabetes, pre-diabetes, and cardiovascular diseases: executive summary. The task force on diabetes and cardiovascular diseases of the European Society of Cardiology (ESC) and European Association for the Study of Diabetes (EASD). Eur Heart J 2007; 28: 88–136.
8. Mohan V, Sandeep S, Deepa R, Shah B, Varghese C. Epidemiology of type 2 diabetes: Indian scenario. Indian J Med Res. 2007; 125: 217-30.
9. Sicree R, Shaw J, Zimmet P. Diabetes and impaired glucose tolerance. In: Gan D, editor. Diabetes Atlas. International Diabetes Federation. 3rd ed. Belgium: International Diabetes Federation. 2006; 15-103.
10. Kristensen JK, Bro F, Sandbeak A. et al. HbA1c in an unselected population of 4438 people with type 2 diabetes on a Danish country. Scand J Prim Health Care 2001; 19: 241–246.
11. Haynes RB, Taylor DW, Sakert DL. et al. Compliance in Health Care. Baltimore, Md: The Johns Hopkins University Press 1979.
12. Valle EA, Viegas EC, Castro CAC, Toledo Jr AC. The adherence to the treatment. Rev Bras Clín Ter 2000; 26(3):83-6.
13. Donnan PT, Macdonald TM, Morris AD. Adherence to prescribed oral hypoglycemic medication in a population of patients with type 2 diabetes: a retrospective cohort study. Diabet Med 2002; 19(4):279-84.
14. Khan AR, Al-Abdul Lateef ZN, Al Aithan MA, Bu-Khamseen MA, Al Ibrahim I, Khan SA. Factors contributing to non-compliance among diabetics attending primary health centers in the Al Hasa district of Saudi Arabia. J Family Community Med. 2012; 19 (1): 26–32.
15. Cramer JA. A systematic review of adherence with medications for diabetes. Diabetes Care. 2004; 27:1218–24.
16. Schetman JM, Nadkarni MM, Voss JD. The association between diabetes metabolic control and drug adherence in an indigent population. Diabetes Care. 2002; 25:1015–21.
17. Krapek K, King K, Warrien SS, et al. Medication adherence and associated hemoglobin AIC in type 2 diabetes. Ann Pharmcother. 2004; 38: 1357–62.
18. Shuvankar M, Biswananth S, Kaushik KD, Agnihotri B, Animesh D. Compliance to antidiabetic drugs: observations from the diabetic clinic of a medical college in Kolkata, India. Journal of Clinical and Diagnostic Research. 2013 April, Vol-7(4): 661-665
19. Shobhana R, Begum R, Snehalatha C, Vijay V, Ramachandran A. Patients' adherence to diabetes treatment. J Assoc Physicians India. 1999; 47: 1173 – 75.
20. National institute of diabetes and digestive and kidney diseases. Diabetes diet, eating and physicalactivity.https://www.niddk.nih.gov/health-information/diabetes/overview/diet-eating-physical-activity. Accessed March 21, 2018

How to cite this article:
R Ratheesh , Bindu Mohandas, A K Sarada, Bhaskaran *A Study On Factors Affecting Drug Compliance To Antidiabetic Treatment Among Adults In A Tertiary Care Hospital* Br J Pharm Med Res , Vol.03, Issue 05, Pg.1176-1183, September - October 2018. ISSN:2456-9836 Cross Ref DOI : https://doi.org/10.24942/bjpmr.2018.316

Source of Support: Nil **Conflict of Interest:** None declared

Your next submission with British BioMedicine Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats
  (Pdf, E-pub, Full Text)
- Unceasing customer service



Track the below URL for one-step submission
http://www.britishbiomedicine.com/manuscript-submission.aspx