Original Article

Role of health education and barriers to compliance among diabetic patients

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Objectives: To measure compliance among diabetic patients, to find the health education received by the patients and its effect on compliance and to study the patient reported barriers to compliance.

Methodology: A cross-sectional study was carried out with diabetic patients registered at two primary health care centers of Abha, South Western Saudi Arabia. A self administered questionnaire including questions to cover the subject's sociodemographic information, health education received, self reported compliance, and perceived barriers to compliance was used.

Results: Compliance regarding diet (56.7%) and exercise (43.4%) was found in lesser number of subjects than compliance to medication (77.1%) and follow up (76.1%). More health education was provided on disease and medication (>90%) than on diet and lifestyle. In those who received health education, significantly better compliance to various aspects was found. Lack of time, dissatisfaction with physician, desire to eat more, side effects of medications and forgetfulness were cited as the main barriers to compliance.

Conclusion: Education of patients regarding various aspects of diabetes and its management is helpful in improving their compliance. The barriers to compliance include behavioral aspects of patient as well as service aspects like dissatisfaction with physician, which need to be addressed to improve compliance. (Rawal Med J 2014;39: 212-215).

Key words: Diabetes, compliance, Saudi Arabia, health education, barriers.

INTRODUCTION

Diabetes is a widely prevalent disease, which has acquired epidemic proportions in the Kingdom of Saudi Arabia (KSA). Saudi Arabia is one of the top ten countries for prevalence (24%) of diabetes.[1] Management of diabetes involves drug therapy in conjunction with lifestyle changes that include dietary modifications, incorporation of physical exercise, weight management and smoking cessation. Landmark trials like the Diabetes Chronic Complications Trial (DCCT) and the United Kingdom Prospective Diabetes Study (UKPDS) have emphasized the importance of pharmacological management in complication prevention.[2,3] The goals in caring for diabetic patients include the elimination of symptoms; microvascular risk reduction through control of glycemia and blood pressure; macrovascular risk reduction through control of lipids and hypertension, smoking cessation and aspirin therapy and metabolic risk reduction through control of glycemia. Such care requires appropriate goal setting, regular complications monitoring, dietary and exercise modifications, medications, appropriate self monitoring of blood glucose and laboratory assessment.[4]

Adherence or compliance is the most important aspect of self care in order to control diabetes and prevent its complications. Patient compliance or adherence is defined as the extent to which a person's behavior coincides with health-related advice.[5] Appropriate health education to patient on various aspects of disease and its management can go a long way in proper disease management. Oftentimes, due to various reasons, patients fail to follow the physicians' advice resulting in poor glycemic control and increased risk for complications. Compliance to various regimens indicates the degree of patient involvement in self care and also reflects on aspects of health services like patient doctor relationship, health education and counseling services. It is necessary to identify the barriers to compliance for addressing the difficulties faced by the patients to reach adequate control of diabetes and avoid its complications. This study was carried out to determine the role of patient education

in compliance and to find the barriers to compliance among diabetic patients.

METHODOLOGY

This cross sectional study was conducted during 2010-2011 on 406 diabetic patients at Abha City Al-Manhal PHCC and King Khaled University Department of Family and Community Medicine, Saudi Arabia. A self administered questionnaire was used that included questions to cover the subject's sociodemographic information, health education received, compliance and perceived barriers to compliance. Areas of health education received by the patient included disease information, medication information and self care education.

Compliance included four areas, namely; medication, appointment, diet and exercise. A Likert scale was used to assess the level of compliance. Compliance was considered good with score of " 0 ", fair with score of "1" and poor with score more than 1. Barriers to compliance were assessed by using open ended questions in the areas of compliance measured. The data were analyzed using SPSS V16.0. Chi-square test was applied for analysis of effect of health education on compliance. A $p< 0.05$ was considered statistically significant.

RESULTS

Out of 406 patients, 70.4% were between 40-60 years age. Most were Saudis (91%). 96% were married. The male: female ratio was 1.49: 1. A large number of patients (42.1%) were illiterate, while only 14.8% had a university education. Diet (56.7%) and exercise (43.6%) was followed by only about half of the patients, however, more than three fourths of patients were compliant to medication and follow-up (Table 1).

Table1. Compliance and non compliance in various areas.

Areas of Compliance	Compliant No. (%)	Non-Compliant No. (%)
Exercise	177 (43.6)	229 (56.4)
Diet	230 (56.7)	176 (43.3)
Follow up	309 (76.1)	97 (23.9)
Medication	313 (77.1)	93 (22.9)

Fig.1 shows that most of the patients (>90%), had received education on the disease and medication while just about half of them received in each of diet, self care and life style.

Figure 1. Percentage of patients who received health education in different areas.

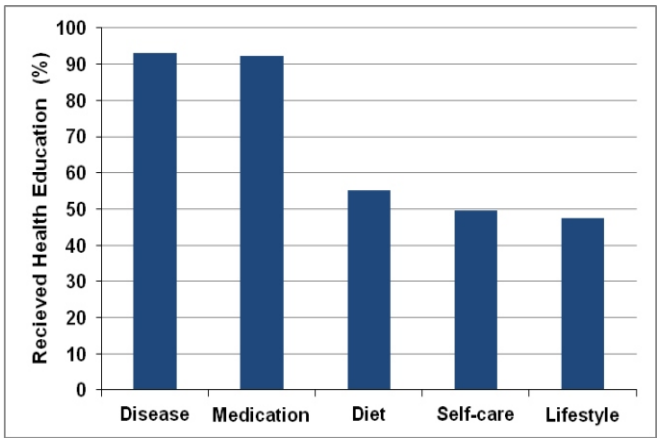

Table 2 describes those areas of health education that affect compliance. Education on medication and diet significantly affected compliance to diet and follow up. Education on self care significantly affected diet, exercise and medication compliance. Lifestyle advice was having significant effect on dietary, exercise and follow up compliance.

Table 2. Effect of health education on compliance.

Health education		Compliance							
		Diet		Exercise		Medication		Follow up	
Area	n	No. (%)	p-value	No. (%)	p-value	No. (%)	p-value	No. (%)	p-value
Disease	378	215(56.9)	0.733	166(43.9)	0.634	285(75.4)	0.003	281(74.3)	0.002
Medication	375	222(59.2)	<0.001	164(43.7)	0.846	291(77.6)	0.398	295(78.7)	<0.001
Diet	224	152(67.9)	<0.001	106(47.3)	0.093	177(79.0)	0.306	181(80.8)	0.014
Self-care	201	126(62.7)	0.015	106(52.7)	<0.001	145(72.1)	0.019	149(74.1)	0.354
Lifestyle	193	135(69.9)	<0.001	97(50.3)	0.010	154(79.8)	0.218	165(85.5)	0.001

Most common reason cited as barriers against compliance were lack of time (48.3%) and dissatisfaction with the physician (38.2%) (Table 3).

Table 3. Main barriers against compliance.

Barriers	No. (%)
Lack of time	196(48.3)
Dissatisfaction with physician	155(38.2)
Desire to eat more	68(16.7)
Side effects of medications	52(12.8)
Forgetfulness	36(8.8)

DISCUSSION

This study revealed that health education was provided to diabetic patients mainly on the disease and medications. Only about half of the patients received counseling on diet, self-care and life style. A previous study from Abha, KSA showed that health education is related to good diabetes control.[6] Another study from Makkah reported that the rate of treatment-related misconceptions was high, and suggested that lack of proper health education was the cause.[7] An earlier study from Abha, KSA reported that only 33% of patients received health education about diabetes.[8] In Egypt, a study reported significant relation of non adherence with no health education by the health care professionals.[9] Van den Arend et al noted that patient education was a fundamental pre requisite for diabetes self management.[10]

Significantly better compliance toward diet was associated with receiving health education to medication, diet, self-care and life style. The patient may adhere to the diet in the hope that he may have to take fewer medicines, avoid medication side effects and maintain their glycemic control at the same time.

Effective education about self-care requires health professionals to have knowledge of psychosocial, epidemiological aspects of the disease along with capacity to communicate, listen, understand and negotiate with the health team and the patient.[11,12] As the primary health care physicians in Saudi Arabia belong to various countries and different cultures, they may be facing difficulties in communicating with the patients about adequate self-care. This may be the reason for poor education on self care. It has been confirmed that self-care education is an essential element in the management of diabetics.[13-16] Primary health care physicians should share with their patients the goals for glycemic control, lipids and blood pressure.[17]

Significantly better compliance towards medication was associated with receiving health education related to disease and self-care. Patients follow treatment regimens more readily if they are kept informed and involved in medical decisions.[18] Patients' knowledge and education directly influences their adherence to medication.[19] Patients need to be empowered with knowledge and resources to enhance their participation in order to improve their diabetes control.[20] Non compliance to medication is often attributed to drug side effects. Nevertheless, patients are seldom asked about them during multi-professional team care. When providers show concern about patient well-being, they are more likely to have adequate follow-up.[21]

The main barriers for compliance in the present study were lack of time for exercise and/or appointment, followed by dissatisfaction with physician, desire to eat more than advised, medication side effects and forgetting the time of medication or the date of appointment. Factors diminishing adherence have been reported as confusion regarding the drug regimen, fear of side effects, the progressive nature of the disease, and costs.[22] Financial barriers are not of much importance in KSA, as medication is provided by state and high per capita income. Patient dissatisfaction with the doctor, poor doctor-patient relationship, lack of doctor's concern, distrust with doctor's advice, or long waiting times to obtain appointments increase the risk of noncompliance.[23] For majority, the side effects are the main factors limiting compliance.[24]

CONCLUSION

Education of patients regarding various aspects of diabetes and its management is helpful in improving compliance. There is an urgent need to address the barriers to compliance. It is recommended to have training sessions for non-local physicians regarding local customs and habits pertaining to diabetes and

self care. Forgetfulness and lack of time can be addressed if proper education and motivation of diabetic patients is carried out at primary health care level. There is also a need to design tailor made education programmes for targeted patients, like those with a high BMI, smokers and the elderly.

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REFERENCES

1. International Diabetes Federation (IDF Diabetes Atlas, Sixth Edition, 2013.). Accessed from http://www.idf.org/diabetesatlas/download-book on Dec.1, 2013.
2. DCCT and EDIC: The Diabetes Control and Complications Trial and Follow-up Study downloaded from http://diabetes.niddk.nih.gov/dm/pubs/control/ on 16 January, 2014.
3. American Diabetic Association. Implications of the United Kingdom Prospective Diabetes Study. Diabetes Care 2002;25 Suppl 1: 528-82.
4. Clark CM, Fredkin JE, Hiss RG.Lorenz RA, Vinicor F, Warren-Boulton E. Promoting early diagnosis and treatment of type2 diabetes; The national diabetes education programme. JAMA 2000;284:363-5.
5. Murphy J, Coster G. Issues in Patient Compliance. Drugs 1997;54:797-800.
6. Abdelmoneim I, Al-Homrany MA. Health education in the management of diabetes at the primary health care level: is there a gender difference? East Mediterr Health J 2002;8:18-23.
7. Al-Saeedi M, Elzubier AG, Bahnassy AA, Al-Dawood KM. Treatment-related misconceptions among diabetic patients in Western Saudi Arabia. Saudi Med J 2002;23 :1243-6.
8. Al-Khaldi YM, Khan MY. Audit of a diabetic health education program at a large primary health care center in Asir region. Saudi Med J 2000;21:838-42.
9. Shokair NF. Pattern and determinants of compliance of diabetics to health care in Alexandria: A community based study. Bull Alex Fac Med 2077;43: 235-46.
10. Van den Arend IJ, Stolk RP, Krans HM, Grobbee DE, Schrijvers AJ. Management of type 2 diabetes: A challenge for the patient and physician. Patient Educ Couns 2000; 40:187-94.
11. Roter DL, Hall JA, Merisca R, Nordstrom B, Cretin D, Svarstad B. Effectiveness of interventions to improve patient compliance: A meta analysis. Med Care 1998;36:1138-61.
12. Nam S, Chesla C, Stotts NA, Kroon L, Janson SL. Barriers to diabetes management: patient and provider factors. Diabetes Res Clin Pract 2011;93:1-9.
13. Knight KB, Henning JM, Hasselblad V, Gano AD Jr, Ofman JJ. A systematic review of diabetes disease management programs. Am J Management care 2005;11:242-50.
14. Sousa VD, Zauszniewski JA. Towards a theory of diabetes self-care management. J Theory Construct Testing 2005;9:61-7.
15. Corser W, Xu Y. Facilitating patient diabetes self management: A primary care intervention frame work. J Nursing Care Qual 2009;24:172-8.
16. Trento M, Passera P, Tomalino M. Group visits improve metabolic control in type2 diabetes: a 2year follow up. Diabetes Care 2001;24:995-1000.
17. Bartol T. Putting a patient with diabetes in the drivers seat. Nursing 2002;32:53-5.
18. Puder JJ, Keller U. Quality of diabetes care: problem of patient or doctor adherence? Swiss Med Wkly 2003;133:530-4.
19. Giemens HT, Zanetti ML, Haas VJ. Factors related to patient adherence to antidiabetic drug therapy. Rev Latino-am Enfermagem 2009;17:46-51.
20. Al-Baghli NA, Al-Turki KA, Al-Ghamdi AJ, Al-Zubaier AG, Al-Amir MM, Al-Baghli FA. Control of diabetes Mellitus in the eastern province of Saudi Arabia: results of screening campaign. EMHJ 2010;16:621-9.
21. Osterberg L, Blaschke T. Adherence to medication N Engl J Med 2005;353:487-97.
22. Brown JB, Harris HB, Webster-Bogaert S, Wetmore S, Faulds C, Stewart M. The role of patient, physicians and systemic factors in the management of type 2 diabetes mellitus. J Fam. Pract 2002;19:344-9.
23. Sweileh W, Aker O, Hamoos S. Rate of compliance among patients with diabetes mellitus and hypertension. An-Najah University J Res (N.Sc.) 2005;19:1-11.
24. Grant RW, Devita NG, Singer DE, Meiges JB. Poly pharmacy and medication adherence in patients with type 2 diabetes. Diabetes care 2003;26:1408-12.