Role of health education and barriers to compliance among diabetic patients

Mohammad Abdul Salam, Aesha Farheen
Directorate of Health Affairs, Aseer Region, and Department of Family and Community Medicine, King Khaled University, Abha, Saudi Arabia

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. 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. 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.

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. 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 of 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).

![Fig.1](image.png)

Table 1. Compliance and non-compliance in various areas.

<table>
<thead>
<tr>
<th>Areas of Compliance</th>
<th>Compliant No. (%)</th>
<th>Non-Compliant No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td>177 (43.6)</td>
<td>229 (56.4)</td>
</tr>
<tr>
<td>Diet</td>
<td>230 (56.7)</td>
<td>176 (43.3)</td>
</tr>
<tr>
<td>Follow up</td>
<td>309 (76.1)</td>
<td>97 (23.9)</td>
</tr>
<tr>
<td>Medication</td>
<td>313 (77.1)</td>
<td>93 (22.9)</td>
</tr>
</tbody>
</table>

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 lifestyle.

![Figure 1. Percentage of patients who received health education in different areas.](image.png)

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.

<table>
<thead>
<tr>
<th>Health education</th>
<th>Diet</th>
<th>Exercise</th>
<th>Medication</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>p-value</td>
<td>No. (%)</td>
<td>p-value</td>
</tr>
<tr>
<td>Disease</td>
<td>378</td>
<td>215(56.9)</td>
<td>0.733</td>
<td>166(43.9)</td>
</tr>
<tr>
<td>Medication</td>
<td>375</td>
<td>222(59.2)</td>
<td>&lt;0.001</td>
<td>164(43.7)</td>
</tr>
<tr>
<td>Diet</td>
<td>224</td>
<td>152(67.9)</td>
<td>&lt;0.001</td>
<td>106(47.3)</td>
</tr>
<tr>
<td>Self-care</td>
<td>201</td>
<td>126(62.7)</td>
<td>0.015</td>
<td>106(52.7)</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>193</td>
<td>135(69.9)</td>
<td>&lt;0.001</td>
<td>97(50.3)</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Barriers</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of time</td>
<td>196(48.3)</td>
</tr>
<tr>
<td>Dissatisfaction with physician</td>
<td>155(38.2)</td>
</tr>
<tr>
<td>Desire to eat more</td>
<td>68(16.7)</td>
</tr>
<tr>
<td>Side effects of medications</td>
<td>52(12.8)</td>
</tr>
<tr>
<td>Forgetfulness</td>
<td>36(8.8)</td>
</tr>
</tbody>
</table>

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 lifestyle.

A previous study from Abha, KSA showed that health education is related to good diabetes control. 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. An earlier study from Abha, KSA reported that only 33% of patients received health education about diabetes. In Egypt, a study reported significant relation of non-adherence with no health education by the health care professionals. Van den Arend et al noted that patient education was a fundamental prerequisite for diabetes self-management.

Significantly better compliance toward diet was associated with receiving health education to medication, diet, self-care and lifestyle. 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. 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 diabetes.

Primary health care physicians should share with their patients the goals for glycemic control, lipids and blood pressure. 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.

Patients' knowledge and education directly influences their adherence to medication. Patients need to be empowered with knowledge and resources to enhance their participation in order to improve their diabetes control. 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.

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. 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.

For majority, the side effects are the main factors limiting compliance.

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.

Author contributions:
Conception and design: Mohammad Abdul Salam, Aesha Farheen
Collection and assembly of data: Mohammad Abdul Salam
Analysis and interpretation of the data: Mohammad Abdul Salam, Aesha Farheen
Drafting of the article: Aesha Farheen
Critical revision of the article for important intellectual content: Aesha Farheen
Statistical expertise: Mohammad Abdul Salam, Aesha Farheen
Final approval and guarantor of the article: Mohammad Abdul Salam, Aesha Farheen
Corresponding author email: aesha_sid@yahoo.com
Conflict of Interest: None declared
Rec. Date: Dec 11, 2013 Accept Date: Jan 31, 2014

REFERENCES