Introduction

Although many considerations were made by developed countries to control infectious diseases resulted in increasing the age of individuals, non contagious diseases did not have the same attention. Diabetes is one of those disease which has now become a major global health problem\(^5\). The International Diabetes Federation (IDF) estimated that 100 million people worldwide are suffering from diabetes disease (about 6% of adults). It is however predicted that it may reach up to 240 million by 2010. This figure is expected to rise to 40% in some regions of the world\(^2,3,4\).

Asia is one of the regions that has high prevalence of Diabetes mellitus\(^6\). WHO reported that in Iran, there are more than 200 thousands diabetic type 1 (IDDM) and above 2 million with type 2 (NIDDM). The prevalence of diabetes in Iran is estimated to be between 5-7\(^%\)\(^7,8\).

Education is one of the most important methods for prevention, treatment, and control of chronic diseases including diabetes. Education is the cornerstone of diabetes care to improve the condition of the patients\(^9\). It is considered so important in diabetic patients as Joslin in 1927, six year after the discovery of insulin, announced that education of diabetic patients is not a part of the treatment, but treatment itself\(^10\). In addition, education may decrease up to 80% of diabetes complications\(^9\).

By using different educational models, one could prevent the disease\(^11\). Many models, are usually used in health education; In this study, BASNEF Model (Beliefs, Attitude, Subjective norms, Enabling factors) is used as an educational model.

Material and Methods

This is a cohort experimental (prospective) study, in which the intervention factor, was education that was presented to the case group. This study was carried out during the year 2000 in the Diabetic Research Center of Yazd.

Sample population who participated in this study were diabetic patients referred to Diabetic Center of Yazd. These patients were given lab test, diabetic drugs, counselling for controlling their disease.

More than 7000 diabetic patients were admitted to the Diabetic Clinic of Yazd, 6000 of type 2 (NIDDM) and the remainder were type 1 (IDDM). This research was done on patient type 2, so 120 patients were randomly selected from the clinic on a 18 day basis. A questionnaire was organized to evaluate their educational needs and it was completed by the whole samples. All of them had done HbA1C test with the method of calorimetry and glucose test. Then the sample were divided into two case and control groups; 60 in each group. For the case group, an educational intervention was performed by group method and face-to face interview. HbA1C test and glucose test was repeated in both groups.

For data analysis, K-square, Man-whitney, Wilcoxon and T-test were used in which reliability was 95%.

Results

Data analysis (Table I), indicated there was significant difference between the mean grade of knowledge in case group in the first period compared with the second period intervention (P<0/000), whereas there was no significant difference between mean grade of control group before and after intervention. There was significant difference between mean grades of knowledge of control and case group before and after intervention, using man-whitney test.

Table I : Comparison of Mean Grades of Knowledge in Two Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Case</th>
<th>Control</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>No Mean ± S.D.</td>
<td>No Mean ± S.D.</td>
<td>P. value</td>
</tr>
<tr>
<td>Before</td>
<td>60 4.77 ± 2</td>
<td>58 3.66 ± 1.77</td>
<td>&lt; 0.002</td>
</tr>
<tr>
<td>Intervention</td>
<td>59 6.26 ± 1.51</td>
<td>59 4.10 ± 2.2</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

The analysis showed no significant difference between mean grades of performance of both groups before intervention (P=0/88).

Table II : Comparison of Mean Grades of Practice in Two Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Case</th>
<th>Control</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>No Mean ± S.D.</td>
<td>No Mean ± S.D.</td>
<td>P. value</td>
</tr>
<tr>
<td>Before</td>
<td>58 2.60 ± 0.90</td>
<td>58 2.56 ± 0.87</td>
<td>&lt; 0.88</td>
</tr>
<tr>
<td>Intervention</td>
<td>60 2.86 ± 0.95</td>
<td>59 2.36 ± 0.92</td>
<td>&lt; 0.004</td>
</tr>
</tbody>
</table>

Whereas, T-test indicated significant difference with P<0/004 between performance of both groups after intervention.

Table III : Comparison of Mean Grades of Belief Norms in Two Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Case</th>
<th>Control</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>No Mean ± S.D.</td>
<td>No Mean ± S.D.</td>
<td>P. value</td>
</tr>
<tr>
<td>Before</td>
<td>60 3.56 ± 1.02</td>
<td>60 3.46 ± 1.03</td>
<td>&lt; 0.56</td>
</tr>
<tr>
<td>Intervention</td>
<td>60 3.93 ± 0.99</td>
<td>60 3.61 ± 1.05</td>
<td>&lt; 0.08</td>
</tr>
</tbody>
</table>

The mean grades of Belief Norms, (Wilcoxon) test indicate, there is significant difference between the mean grades of
Table IV : Comparison of Mean Grades of HBA1C in Two Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Case</th>
<th>Control</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>No Mean ± S.D.</td>
<td>No Mean ± S.D.</td>
<td>&lt; 0.04</td>
</tr>
<tr>
<td>Intervention</td>
<td>Before 60</td>
<td>9.84 ± 1.14</td>
<td>60 9.35 ± 1.24</td>
</tr>
<tr>
<td></td>
<td>After 60</td>
<td>7.28 ± 1.65</td>
<td>60 8.68 ± 9.2</td>
</tr>
</tbody>
</table>

The mean grades of the variable Enabling factors in both groups after educational intervention declined. Wilcoxon test showed that between mean grades of Normative Beliefs in case group before and after intervention (P<0.0016).

The means of the variable Enabling factors in both groups after educational intervention declined. Wilcoxon test showed that between Enabling factors grades in both groups before and after intervention was significantly different, with (P<0.001), but no significant difference observed when T-test used.

The amount HbA1C as an indicator in diabetic patients dropped down in the case group after intervention (9/8+1/4 to 7/27+1/65), using Wilcoxon test showed significant difference between HbA1C case group before and after intervention (Table IV.)

The result obtained indicated that education, effectively increased the knowledge and behaviour of diabetic patients in controlling their disease.

Discussion

Today it is well known that diabetic disease is one of the world-wide problem and must be payed attention in every related scientific research center12. Different studies demonstrate that engaging of educational models as BASNEF model may improve the diabetic condition of the patients referred to clinic and therefore application of this program is firmly recommended10.

In this study, BASNEF model including (knowledge, Attitudes, Enabling factors, and Practice) were employed on 120 patients registered in the diabetic clinic research center of Yazd, Iran.

Data showed that only knowledge of 10% of case group and 7/5% of control group was 100%. In general, 90% of the subjects needed additional knowledge. The model presented and the method used in this study were effective so the mean grade of knowledge of case group after intervention was 6/49 of 7. The knowledge of control group increased a little while completing their first questionnaires, because of answering their questions. Increasing the patients knowledge caused them to perform better in controlling and managing their disease. The statistical tests showed that the increase of knowledge and practice of the patients was significant. Appropriate practice of case group in dealing with their problem decreased their HbA1C.

In general, there are several studies that support the results obtained from the present study. In a clinical trial study in England demonstrated that control of diabetic complication had direct relationship with increase of knowledge of the patients13.

Another important factor recommended by BASNEF Model is Enabling factors. It seems that majority of patients faced this problem as a barrier, in preparation their drugs and attendance the clinic with defined program. One study performed in New Castle showed that barrier are one of the problem that caused the patients not to attend regularly14.

The most important variable in BASNEF Model is behaviour and practice (performance). After intervention the practice of case group in controlling and treating their diabetes, was increased using Wilcoxon test shows, that relationship between the mean grades of the patients practice before and after intervention was statistically significant (P=0.04%).

Other studies which were done in England confirmed the result of this study. So the result of one of them showed that only 63% of patients could manage their disease before training that the percentage developed to 92% after training15.

HbA1C is an effective index for long-term diabetic control. The results of this study showed that HbA1C in case group was relatively decreased after intervention.

The results obtained from the study demonstrated that intervention and educational model could change knowledge and practice of patients in controlling their disease.

References