The Relationship Between Illness Perception, Glycemic Control and Family Support in Turkish Adults with Type 2 Diabetes

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Abstract

Objective: This study aimed to determine the relationship between illness perception, glycemic control, and family support in Turkish adults with Type 2 diabetes.

Methods: A cross-sectional study was performed among 155 adults with type 2 diabetes who were followed in a diabetes outpatient clinic of a tertiary hospital in Turkey. Data were collected using a questionnaire form, the Illness Perception Questionnaire-Revised (IPQ-R) and the Perceived Social Support from Family Scale (PSS-Fa). Glycemic control was evaluated by measuring hemoglobin A1c (HbA1c) levels. Data analysis was performed using descriptive statistics, and Pearson’s correlation coefficients.

Results: This study showed that the IPQ-R subscale scores were significantly associated with HbA1c value and the PSS-Fa score in patients with Type 2 diabetes (p < 0.05).

Conclusions: The results of this study highlight the importance of the perceptions of illness in glycemic control for patients with type 2 diabetes. The results also suggest that perceived family support is generally associated with improvements in beliefs about type 2 diabetes.

Keywords: Family support, glycemic control, illness perception, type 2 diabetes

Abbreviations: IPQ-R: Illness Perception Questionnaire-Revised; HbA1c: Hemoglobin A1c; PSS-Fa: Perceived Social Support from Family Scale

Introduction

According to the estimates of the International Diabetes Federation (IDF), the number of people with diabetes worldwide is projected to reach 629 million (or 9.9 % of adults) in 2045, compared with 425 million (or 8.8% of adults) in 2017. More than one-third of patients with diabetes are estimated older than 65 years. Diabetes is among the leading 10 causes of death in the world. Type 2 diabetes accounts for approximately 90% of all diabetes. Within this context, it is very important to provide cost-effective healthcare services for patients with type 2 diabetes [1].

Illness perception is unique to each individual [2]. It is defined as patients’ beliefs about their illness, and their cognitive and emotional representations of illness [3]. Several studies found that illness perceptions are associated with adherence to treatment and clinical outcomes [4,5]. Mc Sharry et al. [6] mentioned that “patients’ self-care behaviors, including maintenance of glycemic control, may be driven by their health beliefs or illness perceptions of their diabetes” (p. 1300). However, there have been inconsistencies in the literature regarding the influence of illness perceptions on glycemic control [6-8]. On the other hand, social support also affects diabetes-related distress, adherence
Data were collected by using a questionnaire form including sociodemographic and disease-related characteristics, the Illness Perception Questionnaire-Revised (IPQ-R) and the Perceived Social Support from Family Scale (PSS-Fa) [14-15]. Glycemic control was evaluated by measuring glycosylated hemoglobin or hemoglobin A1c (HbA1c) levels.

The Turkish version of the IPQ-R was used to evaluate illness perceptions. The IPQ-R is composed of three sections: illness identity (14 commonly experienced symptoms), causal attributions (18 causes), and a third section (consequences, timeline acute/chronic and cyclical, personal and treatment control, illness coherence, and emotional representations subscales). Items included in the causal attributions section and the third section are rated on a 5-point Likert-type scale, ranging from strongly disagree to strongly agree [14].

The Turkish version of the PSS-Fa was used to assess perceived social support from family. The PSS-Fa consists of 20 items, and each item is rated on a 3-point Likert-type scale. The total score ranges from 0 to 20, with higher scores representing greater perceived social support from family [15].

Data analysis were performed using descriptive statistics and Pearson's correlation coefficients. A p value of less than 0.05 was considered as statistically significant.

### Results

The mean age of the study group was 57.5 ± 15.8 years (range = 22-82), and the median duration of disease was 10 years. More than half (51.0%) of the patients were graduated from secondary and high school. The majority of the patients were married (79.4%), not working (77.4%), and had been living with family members (93.5%). About 10.0% of the patients had an inadequate income, 43.2% had a middle-income and 46.5% had an adequate income. One hundred twelve patients (72.3%) had a comorbid condition (56.3% hypertension, 15.2% cardiac disease, and 28.6% other). Seventy seven patients (49.7%) had chronic complications due to the disease.

Means and standard deviations (SDs) of the IPQ-R subscale scores and their correlations with HbA1c level and the PSS-Fa score in patients with type 2 diabetes are presented in Table 1. The mean PSS-Fa score was 12.5 ± 5.9 (range = 0-20). The mean HbA1c level was 8.6 ± 2.1 (range = 4.2-16.0). As seen in Table 1, Pearson's correlation coefficients demonstrated a significant positive correlation between HbA1c value and the identity subscale score (r = 0.21, p = 0.009), as well as a negative correlation with the timeline (acute/chronic) subscale score (r = -0.18, p = 0.029).

In this study, positive correlations were found between the PSS-Fa score and the personal control (r = 0.28, p = 0.001), the treatment control (r = 0.19, p = 0.021), and the illness coherence subscale scores (r = 0.39, p < 0.001). Pearson's correlation coefficients also revealed negative correlations between the PSS-Fa score and the timeline (acute/chronic) (r = -0.23, p = 0.005), the timeline cyclical (r = -0.25, p = 0.002), and the emotional representations subscale scores (r = -0.30, p < 0.001). Interestingly, there were significant negative correlations between the PSS-Fa scores and the psychological attributions (r = -0.25, p = 0.002) and the accident or chance scores of the causes subscales of the IPQ-R (r = -0.30, p < 0.001).

### Table 1. Mean Scores and Standard Deviations for the Illness Perception Questionnaire-Revised (IPQ-R) Subscales and Their Correlations with HbA1c and the Perceived Social Support from Family (PSS-Fa)

<table>
<thead>
<tr>
<th>IPQ-R</th>
<th>M (SD)</th>
<th>HbA1c</th>
<th>p</th>
<th>PSS-Fa</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity</td>
<td>3.5 (2.9)</td>
<td>0.21</td>
<td>0.009</td>
<td>-0.03</td>
<td>0.736</td>
</tr>
<tr>
<td>Perceptions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consequences</td>
<td>20.8 (5.3)</td>
<td>-0.05</td>
<td>0.539</td>
<td>-0.30</td>
<td>0.229</td>
</tr>
<tr>
<td>Timeline (acute/chronic)</td>
<td>22.9 (5.7)</td>
<td>-0.18</td>
<td>0.029</td>
<td>-0.30</td>
<td>0.005</td>
</tr>
<tr>
<td>Timeline cyclical</td>
<td>13.2 (2.7)</td>
<td>-0.02</td>
<td>0.841</td>
<td>-0.25</td>
<td>0.002</td>
</tr>
<tr>
<td>Personal control</td>
<td>22.5 (4.0)</td>
<td>-0.06</td>
<td>0.431</td>
<td>0.28</td>
<td>0.001</td>
</tr>
<tr>
<td>Treatment control</td>
<td>17.9 (2.3)</td>
<td>0.04</td>
<td>0.591</td>
<td>0.19</td>
<td>0.021</td>
</tr>
<tr>
<td>Illness coherence</td>
<td>16.7 (4.3)</td>
<td>-0.09</td>
<td>0.259</td>
<td>0.39</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Emotional representations</td>
<td>19.1 (5.3)</td>
<td>0.09</td>
<td>0.254</td>
<td>-0.30</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Causes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological attributions</td>
<td>18.9 (4.8)</td>
<td>0.02</td>
<td>0.813</td>
<td>-0.25</td>
<td>0.002</td>
</tr>
<tr>
<td>Immunity</td>
<td>7.1 (2.1)</td>
<td>-0.13</td>
<td>0.101</td>
<td>-0.04</td>
<td>0.620</td>
</tr>
<tr>
<td>Risk factors</td>
<td>20.7 (4.8)</td>
<td>-0.01</td>
<td>0.873</td>
<td>-0.01</td>
<td>0.944</td>
</tr>
<tr>
<td>Accident or chance</td>
<td>5.1 (1.8)</td>
<td>-0.09</td>
<td>0.270</td>
<td>-0.30</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

*Pearson's correlation coefficient was used to calculate p values.

### Discussion

The results indicated that illness perceptions have been linked with glycemic control level as assessed by HbA1c determination, but the direction of these associations is not clear. We found that poor glycemic control was associated with higher beliefs about the number of symptoms attributed and lower beliefs in the chronicity of type 2 diabetes. Our results highlight the importance of the perceptions of illness in glycemic control for patients with type 2 diabetes. This is consistent with previous findings reporting that illness perceptions have associations with glycemic control [6,8]. Mc Sharry et al. [6] also noted that illness perceptions may be changed by targeted interventions, and these changes may eventually improve diabetes outcomes such as glycemic control. In contrast, Paschalides et al. [7] suggested that these two variables did not correlate with each other. Future studies is required to examine whether the relationship between illness perceptions and glycemic control.

This study also showed that illness perceptions among patients with type 2 diabetes were associated with family support. Higher family support was associated with more positive beliefs in controllability and curiosity of type 2 diabetes by the person or medical treatment, and lower beliefs in the chronicity and cyclical nature of type 2 diabetes, as well as lower negative emotional responses, and lower beliefs about causal factors of type 2 diabetes such as psychological attributions and accident or chance. Similarly, Keogh et al. [13] reported that a psychological family-based intervention in patients with poorly controlled type 2 diabetes positively affects both diabetes perceptions and glycemic control.

This study has several limitations associated with its design, and sample size. The results therefore cannot be generalized to all Turkish patients with type 2 diabetes. A better understanding of the associations between illness perception, family support, and glycemic control in patients with Type 2 diabetes would help to develop effective interventions.

### Conflict of Interest

The authors declare that there are no conflicts of interest.
Acknowledgments

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References