Exploring Illness Causal Beliefs and its Relationship with Medication Adherence and Demographic Characteristics among a Sample of Patients with Type 2 Diabetes in Isfahan-Iran

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Abstract

Objective: There is some evidence that causal beliefs are related with adherence behaviors. The aim of the present study was to explore the relationship between illness causal beliefs, demographic factors and medication adherence among a group of patients with type 2 diabetes.

Materials and Methods: Ninety-three patients with type 2 diabetes participated in this study using convenience sampling method. The participants completed the subscale of Cause of Illness Perception Questionnaire-Revised (IPQ) and Medication Adherence Rating Scale (MARS). To analyze the data, the statistical methods of Pearson correlation coefficient and simultaneous multiple regression analysis were conducted.

Results: Participants perceived that psychological factors such as stress and emotional state play an important role in their illness. They also perceived that immunity and accident have little part in their illness. Results showed a significant correlation between age and medication adherence (r=-.20, *P*<0.05). Furthermore, the findings indicated that the education was not related to adherence. The findings did not show any significant correlation between the component of illness causal beliefs (psychological attribution, risk factors, immunity and chance/accident) and medication adherence. However, medication adherence correlated positively and significantly with illness causal beliefs of God (r=0.24, *P*<0.05) and destination (r=0.28, *P*<0.01). According to the results of the multiple regression analysis, destination predicted medication adherence (β=34, *P*<0.05).

Conclusion: This study highlights the importance of assessment of patients' beliefs about their illness. Understanding patients' illness causal beliefs can help practitioners improve medication adherence.

Keywords: Illness causal beliefs, Medication adherence, Type 2 diabetes

Introduction

Diabetes mellitus is a major health problem in Iran (1). There has been a significant increase in the prevalence of diabetes mellitus in Iran (2). Diabetes is one of the chronic diseases for which long-term adherence to treatment are required for positive outcomes (3). The appropriate use of medication is a key to the self-management of

most chronic illnesses. Illness beliefs guide the selection and use of procedure for coping with the illness-related experience and also contribute to patients' compliance (4). When patients are confronted with an illness, they create a representation of this illness or symptoms in order to make sense of or try to cope with the illness and its symptoms. In this process, attributions are made in order to understand the cause of the symptoms (e.g., a psychological attribution such as stress or a physical attribution such as rheumatism) (5). Identifying the cause may provide a sense of predictability and control over the illness. A number of studies have demonstrated that causal beliefs are important guides of illness management behaviors, including adherence to treatment regimens in patients with chronic conditions (6-9). There is some evidence that causal beliefs are related with adherence behaviors. For example, research has found the importance of illness causal beliefs in medication adherence in patients with heart attack (10). To date, no study has examined the association between causal beliefs and medication adherence of patients with diabetes. With regard that beliefs about the causes of diabetes can impact on health outcome and adherence, it is important to explore the causal belief and its association with medication adherence. The purpose of this study was to explore the causal beliefs about diabetes among a group of patients with type 2 diabetes. The second aim of this study was to examine the relationship between illness causal beliefs, demographic factors and medication adherence.

Materials and Methods

Ninety-three patients with type 2 diabetes participated in this study using convenience sampling method. Participants were recruited from Iranian Salamat Clinic in Isfahan during regular visiting to clinic. Patients were included into the study if they were diagnosed with diabetes type 2 for at least 3 months and if they could read and understand the questionnaires. The study took place from

May to September of 2011. Ethical committee approval was granted for the study in each of the participating clinics.

The subscale of Cause of Illness Perception Questionnaire-Revised (IPQ-R) was used to assess the causal beliefs (11). The cause component of the IPQ-R consists of 18 items that inquire patients' attributions about their illness. The scale consisted of four dimensions including psychological attribution, risk factors attribution, immunity attribution, and accident /chance attribution. Two causal items of "God" and "destination" were added to this scale. A high score on each subscale indicates a strong belief that the factor plays a significant role in the etiology of diabetes. Answers scored on a five point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The IPQ-R scale was found to have a satisfactory level of reliability and validity in Iran (12).

Medication Adherence Rating Scale (MARS) was used to measure diabetes adherence (10). It is composed of ten items concerning self-reported adherence. The scale scoring system was dichotomous (yes/no). This scale involves statements of adherent and non-adherent behavior. In this scale, the score higher than midpoint (5) has been regarded as the index of adherence (13). Research in Iran has reported an acceptable validity and reliability for the MARS. The internal reliability of this scale measured by Cronbach's alpha was 0.79.

Results

The mean age of the respondents in the total sample was 44.2 years (SD=12.1), the majority of participants were female (65%) and 83% were married. Nearly 15% of the sample had primary school education, a further 64 percent partially or fully completed the high school and 21% had university education. The average duration of diabetes was 7.3 years. The majority of participants perceived stress (80%), diet (71%), heredity (61%), behavior (53%) and poor medical care (50%) as the causes of their diabetes. As can be seen in Table 1, the highest mean score was related to

psychological attribution (M=3.20) such as stress and emotional state, followed by risk factors (M=2.79) such as heredity, diet, poor medical care and behavior, respectively. For the immunity and accident subscales, the mean was just below the midpoint (2.26 and 2.23 respectively), indicating that participants perceived that immunity and accident play little part in their illness.

Relationships between illness causal beliefs, demographic characteristics, and the components of causal beliefs with medication adherence were examined by Pearson's correlation coefficient. Results showed a significant association between age and medication adherence (r=-0.20, $P<0.05$), indicating that adherence to medicine decreased with age. Furthermore, the findings indicated that the education was not related to adherence. In terms of chance, the study found a significantly negative correlation between the level of education and chance (r=-0.26, $P<0.01$). Indeed, the participants with a lower level of education were more likely to perceive the chance as the cause of their illness. The findings did not show any significant association between the component of causal beliefs (psychological attribution, risk factors, immunity and chance/accident) and medication adherence. However, the study indicated that patients who attributed their condition to God (r=0.24, $P<0.05$) or destination (r=0.28, $P<0.01$) were more likely to adhere to their medication (Table 2).

The results of regression analysis showed that destination significantly predicted medication adherence ($\beta=0.34$, $P<0.05$). But God did not have a significant predictive power for medication adherence (Table 3).

Discussion

The present study showed that majority of patients attributed their illness to psychological attributions such as stress and also risk factors such as heredity and diet. This finding suggests that patients correctly see diabetes as a multi-factorial disease. This finding was consistent with previous research indicating the importance of stress, heredity and diet as the causes of illness in similar samples (13). The literature implies stress, heredity and diet as a causal factor for a wide variety of illnesses. In fact, stress is one of the most commonly reported perceiving causes among patients with diabetes. Previous studies have indicated that accurate understanding of causal beliefs has been shown to be associated with better adjustment (4). This study also showed that participants with lower education perceived chance as an important factor in the cause of their illness. This finding was expected and supports the previous literature that low educated people rely more on external factors (7). Furthermore, medication adherence was not related to education. This finding was inconsistent with other studies.

For example, some researchers reported that individuals with higher education had more adherences to medicine and diet regimen

Table 1. Means and Standard Deviations of Patients with Type 2 Diabetes on Casual Beliefs

Cause Dimension	Mean	SD
Psychological Attribution	3.20	.87
Risk factors	2.79	.61
Immunity	2.26	.96
Accident/Chance	2.23	.94
Item		
Psychological Attributions		
Stress	3.99	1.16
Emotional condition	3.62	1.28
Family problems	3.05	1.32
Mental attitude	2.85	1.31
Overwork	2.68	1.30
Personality	2.79	1.31
Risk Factors		
Diet	3.67	1.11
Heredity	3.47	1.42
Poor medical care	3.25	1.25
Behavior	3.15	1.28
Aging	2.28	1.14
Smoking	2.11	1.08
Alcohol	2.02	1.08
Immunity		
Immunity	2.61	1.32
Environmental pollution	2.13	1.05
Germ	1.96	1.03
Accident/Chance		
Accident	2.18	1.23
Luck	2.31	1.28
Destination	2.59	1.29
God	3.20	1.34

SD: Standard Deviation

Table 2. Correlation coefficients between causal beliefs, demographic characteristics and medication adherence

Variable	1	2	3	4	5	6	7	8	9
1. Age	1								
2. Education	-.17	1							
3. Psychological attribution	.08	-.04	1						
4. Risk factor	-.06	-.06	.21*	1					
5. Immunity	-.13	-.10	.04	.25*	1				
6. Accident/Chance	-.02	-.26**	.17	.29**	.33**	1			
7. Destination	-.08	-.15	.05	.03	.18	.57**	1		
8. God	-.23*	-.18	-.08	-.02	.20*	.32**	.57**	1	
9. Medication adherence	-.20*	-.05	.01	.03	.13	.07	.28**	.24*	1

*$P<0.05$
**$P<0.01$

Table 3. Regression analysis

Criterion Variable	Predictor variables	B	S.E	β	t	Sig
Medication adherence	God	.10	.17	.07	.58	.56
	Destination	.47	.21	.344	2.212	.03

compared to the lower education people (10,14). This study did not provide evidence of the association between causal beliefs of psychological attribution, risk factors, immunity and chance/accident and medication adherence. The lack of association between these causal beliefs and medication adherence may be due to how medication adherence was assessed. However, the study indicated that causal beliefs components of God and destination were associated with medication adherence. In other words, patients who attributed their illness to God's will and destination were more likely to have higher adherence to medication. This finding is inconsistent with the study of Barnes et al. (15). The study highlights the importance of religious beliefs in medication adherence. Moreover, destination significantly predicted medication adherence.

The present study had several limitations. The first limitation was the sample size which makes it difficult to generalize the findings to all patients with diabetes. The second limitation was on medication adherence. In this study, the self-reported questionnaire was used to evaluate medication adherence. For the next studies, a more accurate index, probably a chart of daily medication adherence should be considered for measuring adherence. Furthermore the causal beliefs may be different for patients with type 1 diabetes; further studies should include this group of patients. More research is also necessary to shed light on the mechanism by which causal beliefs might influence adherence.

The results of this study may help the medical practitioners to understand the role of causal beliefs in adherence to treatment. Moreover, the present study highlights the importance of patients' demographic characteristics on perceived causal beliefs.

Acknowledgement

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