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Insulin resistance beliefs in patients with type II diabetes according to the health belief model

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ABSTRACT

Regular administration of insulin injections with correct dosing results in well-controlled blood glucose levels and decreased diabetic complications. This study aimed to investigate beliefs associated with insulin resistance in patients with type II diabetes, according to the Health Belief Model. In this descriptive cross-sectional study, 300 patients with type II diabetes from the hospitals of Ilam were included. Data were collected using the Insulin Resistance Beliefs in Patients with Type II Questionnaire, which was designed using the components of the Health Belief Model from previous studies. The Kruskal-Wallis test, Mann-Whitney test, and Pearson correlation coefficient were adopted at a significance level of less than 0.05. The mean age of the study participants was 9.62 ± 47.77 years. Of them participants, 95 (31.7%) were illiterate, 156 (52%) were married, and 151 (50.3%) had an income level less than 500,000 Tomans per month. The scores for components of perceived sensitivity, perceived severity, perceived barriers, perceived benefits, self-efficiency, operation guideline, and general awareness were 5.37 (2.36), 16.79 (5.07), 27.53 (7.06), 30.83 (5.11), 19.51 (5.44), 27.51 (5.63), and 127.20 (13.91), respectively. Training packages and appropriate nursing interventions are recommended to reduce the negative beliefs associated with insulin injection.

KEY WORDS: HEALTH BELIEF MODEL, DIABETES, INSULIN

INTRODUCTION

Chronic diseases persist for a long time. Therefore, if chronic conditions are not well-controlled, the demand for health care services increases, leading to a reduced quality of life in these,(Esmaeili Shahmirzadi et al., 2012). Diabetes is a chronic disease of the endocrine glands, resulting in a malfunction of glucose metabolism. The disease has three main forms including type I diabetes or insulin-dependent diabetes mellitus (IDDM), type II diabetes or non-insulin-dependent diabetes mellitus (NIDDM), and gestational diabetes mellitus(Statistics released by the World Health Organization showed that 228 million adults have diabetes. The prevalence of this disease in Iran is reported to be 2%–3% and 3.7% in individuals aged >30 years (Kabodi et al., 2016). Diabetes is a silent disease that annually kills approximately 4 million people in the world (Aghayousefi, et al., 2017 Aghayousefi, Dehestani, & Salary, 2017).

Diabetic complications are generally divided into vascular and non-vascular groups. Vascular complications are further subdivided into microvascular & macrovascular groups. Microvascular complications(MC) include nephropathy, retinopathy,neuropathy, whereas in macrovascular complications consist of coronary artery diseases & peripheral vascular disease. Non-vascular complications that may affect patients with diabetes include gastroparesis, skin changes, and infections. Prevention of these complications is necessary (Longo et al., 2014).

Since diabetes is a chronic disease that can cause behavioral and emotional problems in patients, the psychological aspects of diabetes are significant (Seyedoshohadaee, Kaghanizade, Nezami, Hamedani, & Barasteh, 2016). Because of the influence of psychological factors on the quality of lives of patients with diabetes, the impact of these factors is of paramount importance. Previous studies have shown the effects of temporal aspects in the prevention of diabetes in patients with pre-diabetes (Moayedi, Zare, & Nikbakht, 2015). Several studies have been conducted in Iran and other countries concerning the factors that may affect resistance to insulin therapy. These factors include a fear of reduced independence, hypoglycemia complications (Funnell, 2007), increased body mass index (BMI) caused by insulin therapy (Sharifirad, Hazavehi, Baghianimoghadam, & Mohebi, 2007), lifestyle changes, and resistance in patients (Guler, Vaz, & Ligthelm, 2008).

The Health Belief Model is one of the health models, which reflects the relationship between health beliefs and health behaviors. This model places an emphasis on the individual's motivation in performing such health-related (Glanz, Rimer, & Viswanath, 2008). In this model, the desired behavior shall benefit the help-seekers in various health aspects. Subsequently, educators iden-

tify barriers to a behavior and plan accordingly. Next, a training program shall create the necessary sensitivity regarding the complications and risks of failure to perform health behaviors. When patients understand the disease and its complications, they would notice more benefits in performing preventive behaviors, be more inclined to adopt such behaviors, and finally, apply the behavior appropriately (Mohebi et al., 2012; Moodi, Moasheri, & Amirabadi Zadeh, 2016). This model has been considered in many studies to review and assess the health behaviors (Kohdaveisi, Salehikha, Bashirian, & Karami, 2016; Sahraee, Noroozi, & Tahmasebi, 2013a; Soleymanian, Niknami, Hajizadeh, Shojaeizadeh, & Montazeri, 2014; Walker & Jackson, 2015).

If insulin is injected properly and regularly at correct dosages, then blood glucose levels will be controlled, and diabetic complications will be reduced. According to the results of many studies, only 25% of patients with diabetes who need insulin to control diabetes complete this type of therapy (Gough, Frandsen, & Toft, 2006; Grant, Buse, & Meigs, 2005). Given the importance of diabetes and its increasing prevalence, this study aimed to examine the beliefs associated with the rejection of insulin in patients with type II diabetes.

MATERIALS AND METHODS

This study was at descriptive cross-sectional study. This study population consisted of patients with diabetes in the hospitals of Ilam in 2017, of whom 300 patients were included. Inclusion criteria were being affected by diabetes type II, taking insulin to control diabetes, un willingness to take insulin despite doctors' emphasis, having the ability to answer questions, and lack of psychological problems such as psychosis and severe depression or intellectual disabilities.

This study was initiated after researchers had met the study participants and obtained their informed consent. The patients were assured that their personal information would be kept confidential by the researchers. Given that most patients were illiterate to fill out the questionnaires, the interview method was used instead. The researchers daily referred to Shahid Mostafa Khomeini and Imam Khomeini hospitals in Ilam and completed the questionnaire by identifying patients with diabetes. Data were collected using the Insulin Resistance Beliefs in Patients with Type II Questionnaire, which was designed using the constructs from the Health Belief Model accordance with questionnaire developed by Kaboudi et al. (Kabodi et al, 2016).

These constructs included perceived sensitivity (2 items) & perceived severity (6 items) & perceived benefits (9 items) & perceived self-efficacy (6 items) &

Table 1. Demographic characteristics: School-age children with diabetes

Variable		N(%)
Gender	Male	145(48.3)
	Female	155(51.7)
Education	illiterate	95(31.7)
	Diploma and low literate	183(61)
	Collegiate	22(7.3)
income	Less than 500 thousand Rials	151(50.3)
	500 to 1 million	94(31.3)
	1 to 2 million	30(10)
	More than 1 million	25(8.3)
Married	Married	156(52)
	No husband	144(48)
History of insulin	yes	133(44.3)
	No	167(55.7)

perceived barriers (10 items) & and operation guide-line (8 items). Responses provided for all questions were based on a Five-point Likert scale ranging from in One (strongly disagree) to Five (strongly agree). In all aspects of the questionnaire (except the perceived barriers), a high score indicated acceptance of insulin therapy as an appropriate method for diabetes by the patient; however, a high score in the perceived barri-ers reflected numerous obstacles to the acceptance of insulin therapy. A questionnaire a made researcher. But questions of accordance with and on the model of was made by Kaboudi et al 2016) .Reliability and validity of the questionnaire obtained by the researcher. Following data collection, the information obtained was entered using the SPSS software (version 20; Kruskal-Wallis test, Mann-Whitney test, and Pearson correlation coefficient were adopted at a significance level of less than 0.05.

RESULTS

According to the study findings, the mean age of the study participants was 9.62 ± 47.77 years. Of these patients, 95 (31.7%) were illiterate, 156 (52%) were mar-ried, and 151 (50.3%) had an income level less than 500,000 Tomans per month (Table 1).

According to Table 2, the maximum and minimum mean scores were related to the constructs operation guide-line and perceived sensitivity, respectively. The Pearson correlation coefficient suggested that education and level of income had a statistically significant negative associa-tion with a history of diabetes and beliefs associated with lack of insulin injections so that older people with higher levels of education and income had lower levels of nega-tive beliefs about insulin rejection. However, no statisti-cally significant relationship was observed between other demographic characteristics such as age, occupation, mari-tal status, and negative beliefs regarding insulin injection.

DISCUSSION

This study aimed to investigate the beliefs associated with the rejection of insulin in patients with type II dia-betes in Ilam, according to the Health Belief Model con-structs. This model contains five constructs, which are discussed separately in the following section.

Regarding the first construct (i.e., perceived sensitiv-ity), the findings of this study showed that most patients were not sensitive enough to feel the need for insu-lin injections. In Kaboudi's et al. study of 2016, which aimed to determine beliefs associated with insulin injec-tion, the findings showed that only 66.95% of the scores revealed perceived sensitivity of patients in terms of insulin injections. This finding was consistent with that of the present study. Regarding the next construct (i.e., perceived severity, the findings showed that most of the

Table 2. Mean, standard deviation, and correlation between the health belief model constructs and their relationship with the beliefs associated with rejection of insulin injections

constructs / Structures	1*	2*	3*	4*	5*	6*	Minimum	Maximum	S.D (Mean)
perceived sensitivity	-	-	-	-	-	-	2	10	5.37(2.36)
perceived severity	.64**	-	-	-	-	-	6	30	16.79(5.07)
perceived benefits	.48	.32	-	-	-	-	9	45	27.53(7.06)
perceived barriers	.008-	.06-	.10	-	-	-	10	50	30.83(5.11)
perceived self-efficacy	.13-	.02	.24-	.11-	-	-	6	30	19.51(5.44)
operation guideline	.13-	.10-	.20-	.18-	.46	-	8	40	27.51(5.63)
awareness	.53	.58	.56	.27	.39	.36	2	205	127.20(13.91)

**Correlation is significant at the 0.01 level (2-tailed)
*1- 6 (constructs 1 - 6 from the Health Belief Model)

scores of the studied patients did not meet the necessary severity regarding insulin injections.

Similarly, this study (Kabodi et al., 2016) indicated that only 60.7% of scores reflected the severity of insulin injections. In fact, when a person feels no threat regarding the disease (perceived sensitivity and severity), he/she cannot change a behavior appropriately(Dietrich, 1996). According to Patino et al., to enhance the level of threat perceived by the patients (perceived sensitivity and severity), more focus should be placed on the short-term complications of diabetes (Patino, Sanchez, Eidson, & Delamater, 2005).

Concerning other constructs in this model, the results indicated that the scores obtained by most patients in terms of perceived benefits were at a low level and undesirable. Regarding these perceived barriers, the scores were also high and undesirable, resulting in the lack of insulin injection. In a study conducted by Vahidi et al., the perceived barriers in comparison with The other constructs in the Health Belief Model(HBF) had the greatest impact on the construct of self-efficacy in patients with diabetes so that an individual's positive beliefs to follow the prophylactic treatment of diabetes increases by raising their awareness regarding the psychological costs of adopting a behavior (Vahidi, Shojaeizadeh, Esmaeili Shahmirzadi, & Nikpour, 2014).

The findings for the next construct (i.e., perceived self-efficacy) revealed that the patients' self-efficacy levels were not at a desirable level. This result was in line with the ones of Kaboudi et al (Kabodi et al., 2016), Other studies suggested that self-efficacy is an effective and strong predictor of behavior (Avci, 2008; Noroozi, Jomand, & Tahmasebi, 2011; Sahraee, Noroozi, & Tahmasebi, 2013b; Tavafian, Hasani, Aghamolaei, Zare, & Gregory, 2009). In fact, the construct of self-efficacy was the best predictor of self-care behaviors. Findings associated with the operation guidelines showed that this construct received the highest score. According to its relevant items, the medical staff and mass media played the most critical roles, which was similar to the results of previous studies indicating the significant impact of the medical staff (Borhani, et al., 2010; Kabodi et al., 2016)) and mass media (Mahmoodabad et al.,2016; Taghdisi & Nejadsadeghi, 2011) on patient awareness.

CONCLUSION

Training packages and appropriate nursing interventions should be administered to reduce the negative beliefs associated with insulin injection.

CONFLICT OF INTEREST

There is no conflict of interest between authors.

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