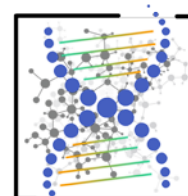


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THE PREDICTIVE ROLE SPIRITUAL INTELLIGENCE IN SELF MANAGEMENT IN ADOLESCENTS WITH TYPE 1 DIABETES

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ABSTRACT

Effective diabetes self-management leads to blood glucose control, reduced morbidity and early mortality in adolescents with type 1 diabetes. Different factors affect the self-management of diabetes whose role and effect is still unknown. Among the influential factors whose effect is vague is spiritual intelligence, this study aims to investigate the predictive role of spiritual intelligence Diabetes management has been implemented in adolescents with type 1 diabetes. Materials and Methods: In this cross-sectional study, 200 adolescents with type 1 diabetes who referred to the Iranian Diabetes Association were enrolled in the study in 2016. The criteria for entering the study were: aged 15 to 21 years, diagnosis of diabetes for more than a year, full knowledge of the patient, illness, non-communicable diseases and psychotropic drugs. Results: Mean score of self-management of diabetes and spirituality was 86.1 ± 15.1 and 60.42 ± 12.9 , respectively. Linear regression test (ANOVA: 0.002, F: 9.839) showed that spiritual intelligence can predict only 4.7% of diabetes self-management changes and its effect on diabetes self-management (Beta: 0.218).

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Introduction

One in every 300 children under the age of 18 suffers from type 1 diabetes [1]. Due to the low level of knowledge and skills of children and adolescents in managing illness, and prolonged periods of illness, the physical and psychological complications of diabetes in adolescents are more than in adults [2]. In adolescents with diabetes, a critical period of adolescence is associated with problems with a metabolic disorder which challenges diabetes control. Despite the similar treatment, levels of glycosylated hemoglobin in adolescents are higher than in adults [3, 4]. Given the unique conditions of adolescence, the lack of definitive diabetes treatment, lifelong follow-up and its impact on all aspects of a person's life, having a normal life requires proper management. To achieve this goal, proper understanding of diabetes by the adolescents, identifying their needs and making decisions for management of the disease and obtaining a proper living based on the culture and situation of their lives in accordance with the disease will be helpful. Self-management of diabetes as a basis for controlling blood glucose significantly reduces the risk of complications and consequently mortality [2, 5, 6]. Combining daily life activities such as physical activity, nutritional behaviors, blood glucose monitoring, scheduling daily health and

disease programs, interpersonal communication with friends, family and health workers are often considered as factors of self-management of diabetes [7].

The incidence of illness in adolescence often causes emotional and existential problems. Cases such as culture, socioeconomic status, and psychosocial factors such as spirituality play an important role in self-management behaviors [8]. Spirituality is one of the essential dimensions of human, which includes affinity and communication with oneself, others, nature and sacred issues. In many studies, spirituality has been investigated as a tool for the management of physical and mental health [9]. Studies have shown that spirituality has significantly contributed to the mental stability of people with chronic illness and leads to a reduction in destructive effects of stress, faster patient recovery and increased life expectancy. Research on chronic diseases suggests that spirituality leads to adaptation to disease, shortening acute periods of illness and reducing complications. Patients' participation in the spiritual and religious activities, with increasing social interactions and family, friends and social networking support, enhances sense of psychological well-being and social welfare [10]. Spirituality can lead to mental health, happiness and good sense of mind through adaptation strategies. According to Maslow (1999), quoted BabaNazari, "spiritual experiences is used as a mechanism for acquiring problem-solving skills and understanding the meaning of life." Therefore, understanding spirituality can be regarded as an aspect of intelligence, because intelligence is the ability to solve a problem and adapt to the environment. Far from being presented through the perspective of knowledge and education, this dimension of intelligence is interpreted on the basis of spiritual inspirations, insights and human reason [11].

Spiritual intelligence requires better adaptation to the environment, and those with higher spiritual intelligence will be more tolerant of life pressures. Some of the spiritual intelligence capabilities are: increasing the ability to cope with stress, making life purposeful, the desire to pray and pray, tolerance of difficult situations, the desire to attend religious places and refraining from the stereotyped principles and beliefs in life [12, 13]. Spiritual beliefs and possibly spiritual intelligence can play a special role in adapting to the disease.

A study conducted on the African-American population showed that there was a positive relationship between spirituality, feeling good, glycemic control and adaptation to illness and self-management, and that clients took advantage of spirituality as a way to cope with illness, get meaning and purpose in life and manage the illness properly [14]. However, there are few studies on spirituality and spiritual intelligence in relation to the spirituality of patients with chronic diseases in various cultures, including Iranian Muslims [15]. Understanding the spiritual aspect of human beings is very important in nursing. Because nursing is a functional discipline that deals with people and undoubtedly the inclusion of spirituality in care is essential. So doing such studies, considering the challenges of managing type 1 diabetes among adolescents, can reveal a new perspective of science.

Methods

This cross-sectional study was conducted, by simple sampling, on adolescents with type 1 diabetes referring to the Iranian Diabetes Association in 2016. The sample size of this study was 172 ($e = 2$, $\alpha = 0.05$) and the estimated loss of 200 was predicted.

$$n = \left(\frac{Z_{\alpha/2} - \alpha/2 \times \sigma}{e} \right)^2 \quad n = \left(\frac{(1.96 \times 13.39)}{2} \right)^2 = 200$$

Inclusion criteria were: age range from 15 to 21 years, diagnosis of diabetes for more than a year, complete knowledge of the patient regarding his disease, not having other physical-psychological illnesses and not taking psychiatric or narcotic drugs. In order to determine the spiritual intelligence score of adolescents with type 1 diabetes, the 24-question SISRI questionnaire which was designed in four subscales of "critical existential thinking, production of personal meaning, transcendental consciousness, and consciousness expansion" was used. The spiritual intelligence questionnaire score was 0 to 96. The respondents' response was measured on a 5-point Likert scale (0-4). In this way, the samples chose one of the following choices: completely false (score 0), false (score 1), to some extent correct (score 2), right (score 3) and completely correct (score 4), in response to each question. However, this method of scoring is reverse for Question 6. The content and form validity of the questionnaire was obtained with the help of five professors and its reliability was calculated 0.903 with the help of ten adolescents using Cronbach's alpha method. To determine the diabetes self-management score of adolescents, the SMOD-A questionnaire, which consists of five subscales "Parental cooperation, diabetes care activities, problem-solving ability in people with diabetes, communication in people with diabetes and The second part includes the "adolescent purposes" area in relation to the illness "designed". The lowest score in this questionnaire is zero and the highest is 144. The scoring method in this questionnaire was based on the Likert scale of the scale of 4 degrees (0-3).

The content and content validity of the questionnaire was completed with the help of 8 faculty members. The reliability of the questionnaire was calculated with the help of ten adolescents in the Cronbach's alpha of 0.82.

The analyzed demographic data included age, sex, degree of education, socioeconomic status of the family and family history, parental education, parental occupation, birth rank and the duration of suffering from diabetes. Data were analyzed

using descriptive statistics (relative frequency-mean and standard deviation) and statistical test regression test in SPSS-18 software.

Results

44% of the participants were male, mean age of the samples was 17.10 ± 1.85 and 61% of them in the middle period of adolescence. The mean duration of diabetes was 5.98 ± 3.79 . Mean score of self-management of diabetes and spiritual intelligence was 86.1 ± 15.1 and 60.42 ± 12.9 respectively. Linear regression test (ANOVA: 0.002, F: 9.839) showed that spiritual intelligence can predict only 4.7% of diabetes self-management changes and its effect on diabetes self-management (Beta: 0.218). Among the sub-groups of spiritual intelligence that was examined stepwise, only the sub-group of personal meaning production could predict 7.5% of diabetes self-management changes and its impact on diabetes self-management (Beta: 0.274) (Table 1). The subcategory of generating personal meanings could predict 7% change in relation to others (the sub-group of diabetes self-management) and affect the amount (Beta: 0.265).

The total score of spiritual intelligence can predict 3.7% of the changes in the sub-group of "goals" self-management and 1.4% of the "problem-solving" self-management changes, and the effect of spiritual intelligence on the sub-group self-management goals (Beta: 0.193) and the rate The effect of total spiritual intelligence on the sub-group is self-management problem solving (Beta: 0.203) (Table 2).

Table 1: Model Summary and Coefficients of pridicte of Spiritual intelligence and total Self-management

Model Summary						
Model		R	R ²	Adjusted R ²	Std. Error of the Estimate	
Total Spiritual intelligence		.218 ^a	.047	.043	14.84953	
Personal Meaning Production		.274 ^a	.075	.070	14.63343	
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	70.682	5.012		14.102	.000
	Total Spiritual intelligence	.254	.081	.218	3.137	.002
2	(Constant)	69.807	4.189		16.664	.000
	Personal Meaning Production	1.234	.308	.274	4.003	.000
3	Communications	.461	.119	.265	3.865	.000

Table 2: Model Summary and Coefficients of predict of total Spiritual intelligence and self-management

Model Summary						
Model		R	R ²	Adjusted R ²	Std. Error of the Estimate	
Self Management: Goals		.193 ^a	.037	.032	2.92261	
Self Management: Problem Solving		.203 ^a	.041	.036	3.92911	
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.138	.986		10.277	.000
	Self Management: Goals	.044	.016	.193	2.770	.006
2	(Constant)	10.905	1.326		8.223	.000
	Self Management: Problem Solving	.062	.021	.203	2.911	.004

Log SQ=69.807+1.234 Production of personal meaning +0.461 Communication

Discussion

This study was carried out with the aim of investigating the predictive role of spiritual intelligence in diabetes management in adolescents with type 1 diabetes. In this study, predictive role of spiritual intelligence subscales in self-management subscales of diabetes was also identified. In this study, the results of spiritual intelligence as a predictor variable in different levels of self-management of diabetes in adolescents were presented. No study aiming at investigating the predictive role of spiritual intelligence in diabetes self-management in adolescent patients was found. The results showed that spiritual intelligence can predict only 4.7% of diabetes self-management changes and its effect on diabetes self-management is 0.218. Of the sub-intelligence groups, only the sub-group of personal meaning production could predict diabetes self-management changes. And among these, self-management subscales only affect "communication". The result of this study is consistent with the study of Mohaddes and Ganjavi entitled "The Effectiveness of Teaching the Concepts of Spiritual Intelligence on Psychological Consequences and Adolescents' Self-esteem". Samples were selected by simple sampling. In this semi-experimental study, that was conducted in a pre-study-post-study form in two groups of 20 male high school teens in the age group of 18- 14 years old, the intervention began after getting the written consent of the adolescents. The study tools were demographic questionnaire, depression, anxiety and stress questionnaire and Rosenberg self-esteem questionnaire, which were analyzed in the software. After 8 weeks of training the dimensions of spiritual intelligence to the case group and comparing it with the control group, which did not receive intervention, depression and anxiety in adolescents decreased. And there was a significant rise in adolescents' self-esteem [16]. According to Rippentrop, spirituality is closely linked to different ways of promoting well-being; patients who do not believe in God or their religious beliefs are faint, in fact, do not associate their illness to God's will, and consider the disease as the result of impairment in the integrity of their bodies, and are more at the mercy of complications of illness and psychiatric disorders [17]. During adolescence, with the formation of the abstract thinking, spiritualism and appreciation of the ontological concepts of spiritual intelligence start to burgeon; questions about spirituality and spiritual intelligence are more prevalent among adolescents with chronic diseases, such as diabetes. Although abstract thinking is formed during the middle period of adolescence, its main development is in the late period of adolescence. So perhaps the predictive role and effect of spiritual intelligence on self-management and its dimensions are more than in other periods of adolescence [2, 8]. In a study conducted by Saheb al-Zamani et al in 2013 entitled "Investigating the Relationship between Spiritual Intelligence with Desirable Psychological Feeling and the Purpose of Life in Nurses" on 270 nurses in Tehran Medical Sciences hospitals, a significant relationship was found between spiritual intelligence and desirable psychological feeling and goal in life ($P < 0.001$). In this study, King Spiritual Intelligence Questionnaire was used to measure spiritual intelligence. Among the sub-scales of spiritual intelligence, there were: the relationship between consciousness with the goal in life ($P < 0.001$), the relationship between the development of personal meaning with the goal in life ($P < 0.001$), the relationship of critical thinking with the goal in life ($P < 0.001$) and the relationship transcendental awareness with purpose in life ($P < 0.02$). Among the subscales of spiritual intelligence and good mental sense, there was a meaningful relationship as follows: the relationship between awareness with a good psychological feeling ($P < 0.001$), the relationship between the development of personal meaning with the goal in life ($P < 0.001$), the relationship of critical thinking with the purpose of life ($P < 0.001$) and transcendental awareness with purpose in life ($P < 0.03$) [18].

Spiritual intelligence is the ultimate and the most basic form of intelligence that is indicative of the values and meanings that cover the psychological components. Based on the results of this study, the impact of spiritual beliefs in life can be identified as a factor in coping with the physical and psychological problems of severe illness. In a society where people have long and rich beliefs, paying attention to spirituality is considered an easier and more desirable way for human and multi-dimensional cares. Also, culture-based care, spirituality, and a comprehensive view toward different dimensions of patients can help the healthcare providers provide more appropriate services to patient.

Research Limitations:

Of the limitations of this study is that no similar study with the same title in adolescence around the world was found. Considering the fact that this study was conducted in the Iranian Association for Diabetes and that those who referred to this center usually had an average economic level, the results of this study cannot be generalized to those of governmental centers. Questionnaires were completed in a self-reporting way so that the mental and psychological conditions of adolescents with the disease with regard to their age, illness and the large number of questions, especially in the self-administered diabetes questionnaire, somewhat influence the results of the research when responding to it. In spite of attempts to establish appropriate interactions with the research units, it was partly outside the control of the researcher.

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