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# The predictive role of spiritual intelligence in self-management in adolescents with type 1 diabetes

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## Abstract:

**INTRODUCTION:** Self-management leads to blood glucose control and reduced morbidity and mortality in adolescents with type 1 diabetes. Different factors affect the self-management whose role and effect are still unknown. Among the influential factors whose effect is vague are spiritual intelligence, and this study aims to investigate the predictive role of spiritual intelligence in diabetes management.

**MATERIALS AND METHODS:** In this descriptive-correlation study, 200 adolescents with type 1 diabetes were enrolled. To measure spiritual intelligence, the 24-question SISRI questionnaire and to measure self-management of diabetes, the SMOD-A questionnaire (48 questions) were used. Data were analyzed using SPSS software version 18 using linear regression analysis tests. Data collection was conducted by simple sampling.

**RESULTS:** Mean score of self-management of diabetes and spirituality was  $86.1 \pm 15.1$  and  $60.42 \pm 12.9$ , respectively. Linear regression test (ANOVA: 0.002,  $F = 9.839$ ) showed effect on diabetes self-management ( $\beta: 0.218$ ).

**CONCLUSION:** This study showed that spiritual intelligence can predict diabetes self-management, though poorly predicted, and by strengthening it, has a decisive role in improving the health of adolescents with diabetes. Considering the findings of this study, a new window of nurses' performance in managing diabetes based on the promotion of spiritual intelligence in the educational, care, counseling, and support roles of nursing science can be opened.

## Keywords:

Diabetes mellitus, self-management and adolescent, spiritual intelligence

## Introduction

One in every 300 children under the age of 18 suffers from type 1 diabetes.<sup>[1]</sup> Due to the low level of knowledge and skills of adolescents in managing illness and prolonged periods of illness, the physical and psychological complications of diabetes in adolescents are more than in adults.<sup>[2]</sup> In adolescents with diabetes, a critical period of adolescence is associated with problems with a metabolic disorder which challenges diabetes control.<sup>[3,4]</sup> Given the unique conditions of adolescence, having a normal

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life requires proper management. To achieve this goal, proper understanding of diabetes by the adolescents, identifying their needs and making decisions for the 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.<sup>[2,5,6]</sup> Given the importance of self-management in people with diabetes, many studies have focused on factors affecting its management. Bigdely *et al.* (2016) examined factors affecting

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self-care in a group of diabetic patients in Iran. Results showed that factors such as age, knowledge about the disease, good relationship between patient and physician, depression, and number of annual visits by health-care team affect self-care in diabetic patients.<sup>[7]</sup>

The incidence of illness in adolescence 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.<sup>[8]</sup> Research on chronic diseases suggests that spirituality leads to adaptation to disease, shortening acute periods of illness, and reducing complications.<sup>[9,10]</sup> Spirituality can lead to mental health, happiness, and good sense of mind through adaptation strategies. According to Maslow (1999), quoted Baba Mazari, “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.<sup>[11]</sup> 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, tolerance of difficult situations, the desire to attend religious places, and refraining from the stereotyped principles and beliefs in life.<sup>[12,13]</sup> 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.<sup>[14]</sup> 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 Muslim.<sup>[14]</sup> 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. Hence, doing such studies, considering the challenges of managing type 1 diabetes among adolescents, can reveal a new perspective of science. Spirituality affects health habits and behaviors. Although spirituality is one of the demographic and psychosocial characteristics of people, it has been found a special position among chronic patients and is considered as an important aspect of the health in people with chronic

conditions. Previous studies have shown that spirituality can positively affect many aspects of life and disease in people living with chronic conditions.<sup>[7]</sup> However, no study was found about the role of predictive spiritual intelligence on self-management in adolescents with type 1 diabetes. Therefore, this study was conducted to fill this gap.

## Materials and Methods

This descriptive-correlation study was carried out on adolescents with type 1 diabetes who referred to the Iranian Diabetes Association in 2017 by convenience sampling. The sample size of this study was estimated to be 200. The researcher visited the Iranian Diabetes Association during 3 months from the beginning of August 2017 to the end of November, during morning and afternoon shifts during the week and began sampling in accessible fashion. 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. 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 0–96. 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 were obtained with the help of five professors and its reliability was calculated 0.903 with the help of 10 adolescents using Cronbach’s alpha method. To determine the diabetes self-management score of adolescents, the SMOD-A questionnaire, which consists of five subscales of “parental cooperation, diabetes care activities, problem-solving ability in people with diabetes, communication in people with diabetes, and the 2<sup>nd</sup> 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° (0–3). The content and content validity of the questionnaire were completed with the help of eight faculty members. The reliability of the questionnaire was calculated with the help of 10 adolescents in the Cronbach’s alpha of 0.82. Data were analyzed using SPSS software version 18 (IBM Company, Armonk, NY, U.S.A.) using linear regression analysis tests.

## Results

Forty-four percent of the participants were male, and mean age of the samples was  $17.10 \pm 1.85$  and 61% of them in the middle period of adolescence. The mean duration of diabetes was  $5.98 \pm 3.79$ . Mean score of self-management of diabetes and spiritual intelligence was  $86.1 \pm 15.1$  and  $60.42 \pm 12.9$ , 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 subgroups of spiritual intelligence that was examined stepwise, only the subgroup 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 subgroup 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 subgroup of "goals" self-management and 1.4% of the "problem-solving" self-management changes, and the effect of spiritual intelligence on the subgroup self-management goals ( $\beta$ : 0.193) and the rate. The effect of total spiritual intelligence on the subgroup is self-management problem-solving ( $\beta$ : 0.203) [Table 2].

## Discussion

In this study, spiritual intelligence could poorly predict diabetes self-management changes. The reason for this weak prediction may be to justify the fact that adolescents are the beginning of the formation and development of abstract thinking; the beginning of thinking about complex issues such as the value and meaning of life, the feeling of bonding with a superior being, self-awareness, and understanding of its place in the natural world, all of which is a component of spiritual intelligence, is also at an early stage. Therefore, in this period of life, spiritual intelligence has less depth and complexity than other stages of life.<sup>[11]</sup> Beliefs and religious beliefs can affect all aspects of the physical and psychological life of individuals and help them in communicating with others, increasing their sense of self-confidence, problem-solving, and decision-making.<sup>[15,16]</sup> In another study, Heidari *et al.* examined the relationship between spiritual health, religious orientation, and blood glucose control in patients with type 2 diabetes. The spiritual health and religious practice were not significantly different between the two groups of patients with glycosylated hemoglobin of more than and equal to 7% and <7% in their study. The lack of meaningful relationship between religious activities and health is likely to be due to the fact that religious activity

**Table 1: Model summary and coefficients of predicate of spiritual intelligence and total self-management**

Model summary						
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	SE of the estimate		
Total spiritual intelligence	0.218 <sup>a</sup>	0.047	0.043	14.84953		
Personal meaning production	0.274 <sup>a</sup>	0.075	0.070	14.63343		
Coefficients <sup>a</sup>						
Model	Subscale	Unstandardized coefficients		Standardized coefficients	t	Significant
		B	SE			
1	Constant	70.682	5.012		14.102	0.001
	Total spiritual intelligence	0.254	0.081	0.218	3.137	0.002
2	Constant	69.807	4.189		16.664	0.001
	Personal Meaning Production	1.234	0.308	0.274	4.003	0.001
3	Communications	0.461	0.119	0.265	3.865	0.001

<sup>a</sup>P < 0.05. SE=Standard error

**Table 2: Model summary and coefficients of predict of total spiritual intelligence and self-management**

Model Summary						
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	SE of the estimate		
Self-management: goals	0.193 <sup>a</sup>	0.037	0.032	2.92261		
Self-management: problem solving	0.203 <sup>a</sup>	0.041	0.036	3.92911		
Coefficients <sup>a</sup>						
Model	Subscale	Unstandardized coefficients		Standardized coefficients	t	Significant
		B	SE			
1	Constant	10.138	0.986		10.277	0.001
	Self-management: goals	0.044	0.016	0.193	2.770	0.006
2	Constant	10.905	1.326		8.223	0.001
	Self-management: problem solving	0.062	0.021	0.203	2.911	0.004

<sup>a</sup>P < 0.05. Log SQ=69.807+1.234 Production of personal meaning+0.461 communication. SE=Standard error

of individuals decreases with increasing severity of illness and disability. Therefore, nurses should assess the cultural and religious factors that affect blood glucose control and management in the care of diabetes patients.<sup>[17]</sup> A group of adolescents with diabetes is considered to be divine wisdom or God's special attention to them, and they are more specific and help with spiritual resources to reduce issues and problems and achieve their goals.<sup>[18]</sup> All religions can provide solutions for increasing spirituality in individuals and presenting many sources in this regard. In Iran, religion is often the people of Islam. The Quran of the Muslim Bible is one of the factors that reduces the pressures of life in them. One, who considers the Quran as the guide and guide of his life, sees it as living in all aspects of life. In people who have spiritual beliefs, a semantic framework is formed in a person. As a result, adolescents with spiritual beliefs are more adaptable in accepting their illness; less tolerance of depression and anxiety.<sup>[7,18]</sup> In other words, in the case of strengthening spiritual intelligence in adolescents, it can be used as a means of compromising disease, managing blood glucose and controlling complications, and reducing hospitalization and mortality.

### Ethical considerations

Ethical considerations of research include: This article is the result of the Master's thesis of pediatric nursing of Iran University of Medical Sciences with the following code: 9311687004. 1395. IR.IUMS.REC. The researcher after was introducing to the Association of Iranian Diabetes and units and explaining the purpose of research and obtaining written consent from parents and adolescents using the name of the Iran University of Medical Sciences to head the Association of Diabetes and obtaining permission from them. Full respect for the principles of ethics and trust in the use of all resources and accurate publication of results research.

### Conclusion

Considering the increasing number of diabetic cases worldwide and importance of self-management's role in this field, many researchers have tried to improve the health status of these patients by improving their self-management. This study showed that spiritual intelligence can predict diabetes self-management, though poorly predicted, and by strengthening it, has a decisive role in improving the health of adolescents with diabetes. Although few studies have been conducted on the effect of spirituality on self-management in people with diabetes, particularly adolescents, it seems that spirituality has a major role in their self-care. Therefore, health-care planners should pay attention to this matter and consider it in planning. Due to the lack of studies, there is a great need for further studies in this regard, and

it is recommended that researchers consider this issue in future studies. It is also recommended to conduct similar studies among individuals with different religious and cultural contexts.

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### Conflicts of interest

There are no conflicts of interest.

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