



The Effect of Spiritual Care on Adjustment of Adolescents with Type 1 Diabetes

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Abstract

Background: Diabetes is a stressful condition, which affects identity and psychosocial dimensions in adolescent then they need to be adapted. This study was conducted to investigate the effect of spiritual care on adolescents' adjustment with Type 1 diabetes.

Materials and Methods: This randomized controlled clinical trial study was performed on 52 adolescents with Type 1 diabetes mellitus members of Sanandaj Diabetes Association (Sannadaj city, Kurdistan province, Iran), who were selected through convenience sampling and randomly divided into two groups (26 in each group). Spiritual care in the intervention group was performed in group form and daily for 6 sessions. Data were collected using "Baseline Characteristics Questionnaire", and "Lazarus and Folkman Coping Strategies Questionnaire" before and after the intervention and three weeks later. Data were analyzed using SPSS software version 19.0.

Results: Chi-square test indicated the difference between the groups according to the level of education ($p=0.048$). Therefore, the effect of this variable was moderated. The mean of overall adjustment score in control group before and after providing intervention in the intervention group and during the follow-up period was 94.92 ± 13.04 , 90.12 ± 10.96 , and 92.08 ± 13.34 , respectively. The mean of overall adjustment scores in the intervention group before and after intervention and during the follow-up period were 104.08 ± 23.35 , 112.46 ± 17.09 , and 117.35 ± 16.05 , respectively; also t-test result showed a significant effect of intervention type ($p<0.001$).

Conclusion

The results indicate the positive effect of spiritual care on adolescents' adjustment with Type 1 diabetes after the intervention and three weeks later in intervention group, but the increase of adjustment was not rational reasonable in control group.

Key Words: Adaptive behavior, Adolescent, Care, Diabetes Mellitus, Spirituality.

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1- INTRODUCTION

Diabetes is a chronic, progressive and life-threatening metabolic syndrome described through disorders in carbohydrate metabolism, protein, and fat and is one of the most costly universal problems that directly take 2.5 to 15% of the total health budget. Type 1 and type 2 diabetes are two main forms of chronic disease that occur before both types of diabetes glucose abnormal homeostasis. Type 1 diabetes occurs in 75% of cases under the age of 18 (1), and type 1 diabetes is one of four chronic conditions in adolescents worldwide (2).

Of every 1,000 children, 2.2 have diabetes, 98% of whom have type 1 diabetes (3). In 2013, American Diabetes Association revealed that 490,000 adolescents in the world have diabetes, increasing at a rate of 3-5%, relatively (4). Also, 5-10% of adolescents in Iran are affected by type 1 diabetes (5). Adolescence is a period in which people are at risk of physical and social disorders, and attention is paid to the appearance and body-image (6), and diabetes puts adolescents and their families under a significant amount of chronic tension (5). Due to their limited diet and activity level and the need for careful and permanent attention, it affects their personal identity, social and psychological aspects, emotional balance, self-satisfaction, competence, social interactions and finally, the adolescent needs to adjust him/her to them (3).

Adapting to the disease means preserving a positive attitude towards oneself and the world despite one's physical problems (7). The successful adjustment of the problems caused by diabetes improves self-care and self-management in adolescents (8), and 30-50% of adolescents with diabetes are weak in their disease control (9). One of the adjustment strategies at this age is spirituality (10). Spirituality is a personal search for meaning and goal in life (11). Spiritual care is a kind of care that

recognizes and responds to humans' spiritual needs while facing trauma, diseases or worries (12). These rituals might not cure a patient, but help him/her feel better, prohibit a number of health conditions and prepare them to cope with the disease or even death (13). Generally, facing crisis in life, people have a tendency to search for an extraordinary power to find a way to cope with the problems and adjust to the new situation which provides a good opportunity for spiritual development (14). However, although many studies have considered spirituality and spiritual care a useful approach for chronic patients (15, 16); spiritual care is often neglected by health care providers, while nurses are easily admitted to the private domain during the course of the illness; therefore, nurses should be mindful of the spiritual needs of patients and consider them as part of the daily activities (11). Furthermore, there would be less demand for low cost interventions, by addressing these needs hospitalization is reduced and consecutively, spiritual care is an effective, safe, affordable and progressive care (17).

Due to dominant spirituality in Iran and the importance of considering the patient's spirituality in healthcare field due to its effects on the outcomes of patients, especially adolescents for their high level of ethic and spiritual value acceptance, the important effect of nurses on spiritual care, the lack of qualitative and quantitative nursing studies about the effect of spiritual care on adolescents with diabetes and finally the importance of this age group as the human resources in Iran (6), this study aimed to determine the effect of spiritual care on adolescents' adjustment with type 1 diabetes.

2- MATERIALS AND METHODS

2-1. Study design and population

The present research is a randomized controlled clinical trial with two

intervention and control groups. In this study, adolescents with type 1 diabetes who were members of Sanandaj Diabetes Society, Sanandaj city, Kurdistan province (Iran), were surveyed.

2-2. Methods

The sample size was based on the previous study (18), with regard to the presumptions ($\alpha=0.05$), ($\beta=0.2$), ($\delta=21.3$), ($d=17.8$), and

$$\text{Equation } n = \frac{2\delta^2(z_{1-\alpha/2} + z_{1-\beta})^2}{d^2}$$

and with the probable loss of samples (19), finally, 26 subjects were allocated to each group, but during the spiritual care sessions there was no decrease in the number of samples. In this study, sampling was done in convenient sampling and from the Sanandaj Diabetes Society in accordance with the entry criteria due to the time limit, and also the difficulty in finding adolescents with diabetes. The samples were assigned into two groups randomly, and based on the folder number of these adolescents. Accordingly, the even numbers were considered in the control group and the odd numbers were determined in the intervention group.

2-3. Inclusion and exclusion criteria

The criteria for entering this study include being aged 12 to 18 years old, being Muslim, lack of occurring stressful experiences in one year, adolescent life with both parents, absence of any chronic disease other than diabetes, passing at least 6 months from the diagnosis of diabetes in adolescents, receiving insulin, and the ability to participate in research and passing the end of the exams. However, adolescents who were absent more than one session of the six or who discontinued the spiritual care program were excluded.

2-4. Measuring tools

The research tools were "Baseline and clinical characteristics questionnaire", and "Lazarus and Folkman Coping Strategies Questionnaire". Baseline and clinical

characteristics questionnaire included 12 items: adolescent age, gender, level of education, birth rate, age of diagnosis, number of siblings, duration of type 1 diabetes, number of admissions, and living with parents. Adjustment conceptualization, as a complex and multidimensional process, involves key issues such as coping, emotions, subjective meaning, integrity, adaptability, support, and process orientation. An experimental study has shown that positive coping is identical and aligned with adjustment (20), so according to the above definitions, adjustment is a kind of coping. Therefore, the Lazarus and Folkman Coping Strategies Questionnaire was used to determine the adjustment of adolescents with diabetes, this questionnaire was developed by Lazarus and Folkman in 1980, and revised in 1985 (21, 22).

It had 66 items of 4-point Likert ("not used=0", "used a little=1", "used somewhat=2", and "used a lot=3") with a minimum and a maximum score of 0 to 198. Scores of 0 to 66 mean that the matching strategy is used very rarely or very little, scores of 66 to 110 mean that the matching strategy is sometimes or relatively used and the scores of 110 to 198 mean that the matching strategy is often or usually used. It has 8 subscales (21). These subscales are divided into two categories of problem-focused and emotionally-focused methods (18, 21, 22). It is a standard tool and its validity and reliability have been confirmed in internal and external various studies (18, 21, 22). In Iran, this scale was translated and validated by Vahedi in 2000 (23). In this study, the validity of the questionnaire was determined using face validity method, and content validity method (the study tool was provided to 10 faculty members of Shahid Beheshti Faculty of Nursing and Midwifery in order to determine the appropriateness of the terms in the instrument in terms of grammar and

content). Reliability through internal correlation coefficient method (ICC) by conducting the research tool in 15 adolescents who had entry criteria for research and resuming after two weeks by the same people (ICC=0.93), and Cronbach's alpha coefficient for the questionnaire ($\alpha=0.92$) was calculated. The spiritual care program was designed based on the intervention by the number of authors in several studies (18, 24, 25), as well as the definition of the concept of spirituality (25). After confirming the validity of the package of spiritual care by a group of specialists, the intervention was performed by an expert in the form of

group sessions, during six weekly sessions of 45 to 60 minutes in the morning (10-11 AM) in the Sanandaj Diabetes Association for intervention group adolescents in August 2017. Spiritual care has a wide dimension, and only a part of these dimensions, such as which is an important part of the concept and undergoes a lot of changes in patients with chronic illness (6), were considered. For re-accessing the control group adolescents, the telephone number and, if needed, their home address was obtained before the intervention for the intervention group. The intervention programs done are presented in **Table.1**.

Table-1: The content of the spiritual care sessions for interventional group.

Session	Contents of session
First session	Introducing yourself as a researcher and familiarization with adolescents because providing spiritual care for people who do not have a spiritual and religious background is not appropriate (6), expressing goals and number & time of session, receiving written consent from adolescents and parents of adolescents under 16 years old, providing demographic and clinical characteristics questionnaires and coping strategies of Lazarus and Folkman to the adolescents of the two groups to complete by themselves.
Second session	Spiritual evaluation and identification of the spiritual needs of adolescents in the intervention group (asking questions such as "What did you do after your disease was diagnosed?"; "The control of diabetes must be difficult. How did the disease affect your life?"; "What's worrying about this disease in you?"; "Who is the most important person in your life?"; "What is the significance of religion and God for you, and do you consider God to blame for your disease?"; "Is praying helpful to you?"; "What happens to you when you pray?"; "Have you ever complained to God?"; "What future do you imagine for yourself?"; "For a number of people, religious and spiritual beliefs (prayer) are a source of power, hope, and consistency. Is it the same for you?"; "Has it ever come to you to read Quran, and pray to calm yourself down?")
Third session	Identify distresses and concerns of adolescents and focus group and ultimately respond to them.
Fourth session	Respect the spiritual situation of adolescents, to guide the beliefs of patients by giving information, encouraging and assisting in religious activities.
Fifth session	Expressing promising conversations, and, if desired, the presence of a clergy in the class for advisement.
Sixth session	Closing and summarizing the sessions and giving the Lazarus and Folkman coping strategies questionnaire to the adolescents in the intervention and control group. Finally, three weeks after the end of the intervention, the questionnaire was completed by two groups (while gaining their trust, telephone number and, if desired, their home address, we tried to re-access the interventional group during the intervention). Three weeks after the end of the intervention, calls were made to the telephone numbers and the participants were asked to select the place where they could be contacted to complete the research tool). Considering that adjustment is a continuous process and its occurrence requires time lapse (18), therefore, adjustment in adolescents with type 1 diabetes after intervention, and also three weeks after intervention was investigated.

2-6. Statistical analyses

In this study, the frequency, percentages for variables, mean and standard deviation (SD) were used to describe the data, and the repeated measure analysis of variance and Fisher's exact test, Chi-square, Mann-Whitney, and Independent T-test were used to analyze the data, given that the response variable was measured three times during the follow-up period. The statistical analysis was performed using SPSS software version 19.0. In the tests, 0.05 was considered as a significant level. According to the central limit theorem, considering that the sample size was greater than 25, the normal mean distribution was considered, in other words, according to the study (26), we calculated the amount of slip and elongation, which did not rule out the normal distribution of adjustment.

2-7. Ethical considerations

This study was conducted after receiving the permission of the Ethics Committee of Shahid Beheshti University of Medical Sciences with the registration code of IR.SBMUPHNM.1395.639, the Clinical Laboratory Research Center with the clinical trial code of IRCT20171107037295N1, and coordinating with the officials of the Sanandaj Diabetes Society, receiving written consent from adolescents over 16 years old and written informed consent from parents of adolescents under 16 years old and providing assurance to the participants about the confidentiality of the information.

3- RESULTS

In this study, most of the samples were female (69.2 %, n= 18 in the intervention group, and 46.2%, n=12 in the control group), and the first child of the family (57.7%, n=15 in the intervention group, and 50%, n=13 in the control group). According to the results of Chi-square,

independent t-test, Mann-Whitney test, and Fisher's exact test, there was not a statistically significant difference between the control group and the intervention groups regarding age, gender, birth rate, age of diagnosis, number of siblings, duration of the infection, number of admissions and living with parents as demographic variables. However, the results of Chi-square test showed that in the control and intervention groups the level of education ($p= 0.048$), did not match the majority of the samples in the first group of high school (73.1%, n= 19), and most of the samples in the intervention group in the second secondary school (57.7%, n= 15) (**Table.2**).

In order to investigate the effect of intervention on adjustment, the repeated measure variance analysis was used with moderating of the effect of education level variable. Considering the significant effect of time and group interactions ($p= 0.02$), the mean of overall adjustment score of both control and intervention groups was compared at any time. Independent t-test showed that there was no significant difference between the mean of adjustment scores in the two groups before the intervention ($p= 0.08$), but this difference was significant at post-intervention period and during follow-up period ($p<0.001$).

In other words, the mean of adjustment score in the intervention group after intervention and during the follow up period was greater than that of the control group (**Figure.1**). The mean score of emotion-oriented coping strategies in the intervention group was (39.57 ± 10.29), and in the control groups was (38.50 ± 6.23) before intervention, on the other hand, the mean score of problem-control coping strategy in the intervention group was (37.76 ± 10.81), and in the control group was (31.53 ± 6.31) before intervention. By moderating the effect of education level variable and post-intervention problem-response score in the repeated measure

variance analysis, there was a significant difference between mean score of problem-oriented coping dimension over time ($p= 0.022$), also in this case, the effect of intervention type was highly significant ($p<0.001$). By using the repeated measure variance analysis and moderating the effect of education level variable, in the control group, there was a significant statistical difference among the mean

scores of direct coping subscales ($p= 0.22$), self-control ($p= 0.02$), escape ($p= 0.005$), positive revaluation ($p=0.006$), and acceptance of responsibility ($p= 0.02$) over time, but in the intervention group, there was a significant difference between the mean scores of distance between subscales ($p= 0.004$), self-control ($p= 0.002$), scheduled problem solving ($p= 0.002$) over time (**Table. 3**).

Table-2: Baseline characteristics of participants.

Variables	Classification	Group		P-value
		Intervention, n= 26	Control, n= 26	
Gender, Number (%)	Female	18 (69.2)	12(46.2)	0.09*
	Male	8 (30.8)	14(53.8)	
Level of Education, Number (%)	First course of high school	11(42.3)	19(73.1)	0.04 [×]
	Second course of high school	15 (57.7)	7(26.9)	
Birthday rate, Number (%)	First	15 (57.7)	13(50)	0.59*
	Center	6 (23.1)	7(26.9)	
	End	5 (19.2)	6(23.1)	
Living with parents	Both of them	24 (92.3)	21(80.8)	0.41***
	Just father	2 (7.7)	5(19.2)	
	Just mother	0	0	
Age, year (Mean ± SD)		15.19 ± 1.81	14.80 ± 2.15	0.489*
Age of diagnosis, year (Mean ± SD)		9.50 ± 4.31	10.80 ± 3.24	0.223*
Number of siblings (Median- Q ₁ , Q ₃)		(2-1,3)	(2-1, 2.25)	0.992**
Disease duration (Median- Q ₁ , Q ₃)		(5.50-2,9.25)	(4-2,5.25)	0.459**
Number of admissions (Median- Q ₁ , Q ₃)		(1-1,3)	(1-1,2)	0.827**

*Independent T test, [×] Chi-square test, ** Mann-Whitney test, *** Fisher exact test. SD: Standard deviation; Descriptive statistics (Mean ± SD) for normal quantitative variables, (Median- Q₁, Q₃) for abnormal quantitative variables and (Number (%)) for qualitative variables have been reported.

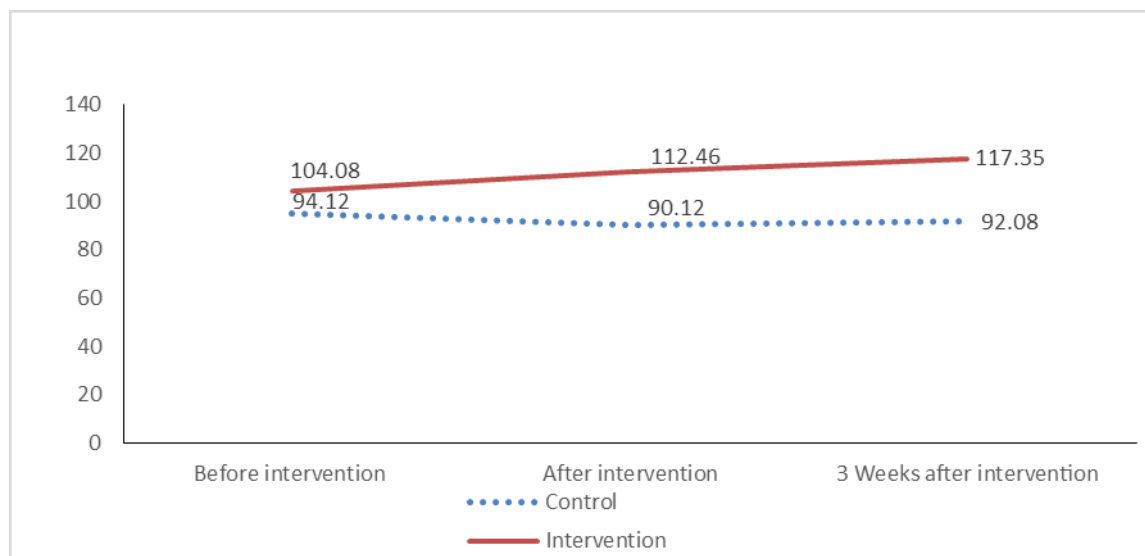


Fig.1: The trend of overall adjustment means scores change over time for type 1 diabetes mellitus adolescents in intervention and control groups.

Table-3: Mean scores of Lazarus and Fulkman Coping Strategies in the overtime for the intervention and control groups

Subscale of Lazarus and Fulkman Coping Strategies Questionnaire	Groups	Before Intervention	After Intervention	Follow- up	Overall Mean (SD)	P-value
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Direct coping	Control	7.1 (2.6)	6.3 (2.6)	7.3 (2.4)	6.9 (2.53)	0.02
	Intervention	7.7 (2.7)	8.0 (2.1)	8.4 (2.5)	8.03 (2.43)	0.30
Distancing	Control	8.1 (2.2)	7.8 (2.2)	9.2 (2.1)	8.36 (2.16)	0.0001
	Intervention	9.1 (3.4)	9.3 (2.2)	11.6 (2.1)	10 (2.56)	0.004
Self-control	Control	9.9 (1.8)	9.9 (1.9)	10.6 (2.3)	10.13 (2)	0.02
	Intervention	11.1(3.2)	12.8 (2.5)	13.6 (2.4)	12.5 (2.7)	0.002
Demanding social support	Control	8.3 (2.3)	8.5 (2.4)	8.3 (2.8)	8.36 (2.5)	0.87
	Intervention	10.5 (4.7)	11.1 (3.2)	11.4 (2.3)	11(3.4)	0.40
Escape	Control	13.1 (2.4)	12.8 (2.0)	11.8 (2.7)	12.56 (2.36)	0.005
	Intervention	11.5 (4.1)	11.1 (4.4)	10.6 (4.2)	11.06 (4.23)	0.33
Positive re-evaluation	Control	8.5 (2.8)	7.6 (2.4)	6.9 (2.3)	7.66 (2.5)	0.006
	Intervention	12 (3.6)	12.5 (1.9)	11.8 (2.0)	12.1 (2.5)	0.38
Scheduled problem solving	Control	7.9 (2.2)	7.2 (1.7)	7.5 (1.8)	7.53 (1.9)	0.09
	Intervention	9.1 (3.0)	10.1 (2.6)	10.8 (2.4)	10 (2.66)	0.002
Acceptance of responsibility	Control	6.6 (1.5)	5.9 (1.7)	5.3 (1.7)	5.93 (1.63)	0.02
	Intervention	6.1(2.1)	6.7(1.4)	6.5(1.7)	6.43 (1.73)	0.43

* Repeated measure analysis of variance; SD: Standard deviation.

4- DISCUSSION

The purpose of this study was to determine the effect of spiritual care on adolescents' adjustment with type 1 diabetes. The results showed that the mean change in the mean of overall adjustment score was not the same in the control and intervention groups after the intervention, and in the follow-up period (3 weeks after the intervention). This means that the mean of the overall adjustment score in the intervention group after the intervention and in the follow-up period was higher than the control group. Therefore, it can be said that the spiritual care that has been applied in the intervention group can promote adjustment in adolescents with type 1 diabetes. The results of Reynolds et al. in 2014, and Yodchai et al. in 2017 indicate that people with chronic illness use spiritual care as a way to adapt and cope with illness (27, 28).

Other studies also found praying as a factor in happiness, improved social protection, and increased compliance with disease-related stresses (29, 30). Also, Heidari et al. in 2013 showed that diabetes may lead to an increase in the expression of spirituality as a coherent strategy by creating a crisis in one's life (31); these results and studies of Torabi et al. in 2018, NikSerscht et al. in 2016 (18, 23), are consistent with the results of present study; it can be noted that in societies with an eastern culture, people have religious beliefs and rich cultural beliefs that often have a religious approach to life's difficulties. This may not be true in other societies. For example, a study stated that in general, spirituality and religion do not relate to the sense of well-being and adjustment to people (32). Also in this study, the findings indicated that the mean of overall adjustment score in adolescents with chronic diabetes was low, although the median of the adjustment score may be improved due to more than 6 months of diagnosis while another study reported low

levels of adjustment with diabetes (33), but the results of one study found that diabetic patients' adjustment is at a good level (34). Differences in the results of adjustment in diabetic patients in different studies and the inconsistency of the results of this study with the present study can be related to the time of diagnosis of chronic diabetes, the difference in research population in terms of type of diabetes and an adjustment tool. Generally, the use of emotionally-focused subscales in adolescents with diabetes in the intervention group and control before intervention was more than the problem-focused strategy subscales. This suggests that adolescents, because of poor problem solving skills (6), often use more emotionally-focused strategies to accept and adapt to disease, which is consistent with the results of Bagherian Sararoudi in 2009 (35), but a study stated that Swedish diabetic patients are more involved with problem-focused coping (36); while the results of another study carried out by Tuncay et al. in 2008 suggest that diabetes patients use emotionally-focused and problem-focused methods equally (37).

Such distinctions may be related to the inclusion of the research population in the period of puberty and adolescence. Emotion-oriented coping strategy subcategories are direct coping, distancing or self-control, and escape-avoidance. The mean scores of direct coping subscales, distancing, and self-control of the emotion-oriented coping strategy in the intervention group increased over time and the mean score of the escape subscale decreased. In the control group, the mean scores of the self-control subscale increased over time, and the mean score of the subscales of escape, direct coping, and narrowing of the gap reduced. Carr in 2011 showed that patients used escape strategy in the early years of diagnosis but were less likely to use avoidance strategies, while seeking to find a solution to the problem (38).

This is in line with the results of a study by Farran et al. in 2016 (39). On the other hand, Torabi et al. in 2018 showed that the adolescents with cancer were more likely to use escape strategy than inappropriate methods for adaptation before receiving spiritual care. By performing spiritual care, the mean score of this strategy was lower than before receiving spiritual care (18). The results of these studies are in line with the results of the present study. In this study, the mean score of escape (avoidance) strategy at the beginning of the intervention in the intervention and control group, although they were not in the first months of diagnosis, used escape strategy more than other strategies which was ineffective for adaptation.

Using this strategy decreased in the intervention group over time and by a better understanding of the disease, and receiving spiritual care compared to the pre-intervention, and often sought a suitable way to deal with the illness-related problems. The problem-oriented coping strategies subscales were seeking social support, accepting responsibility, solving a planned problem and re-evaluating positively. The results showed that the mean score of problem-oriented coping over time in the intervention group is increasing, and the mean of this score in the intervention group after the intervention and in the follow up period is more than the control group, which confirms the effect of spiritual care on helping the adolescents to select a more effective adaptive approach. The results of Torabi et al. in 2108 (18, 40) were in line with the results of this study.

4-1. Limitations of the study

One of the limitations of this study was sampling method that was convenience sampling. Thus, the generalization of the findings should be carried out with caution. Since the statistical population of the present study is adolescents with type 1 diabetes in Sanandaj, Kurdistan province

(Iran), the generalizations of the research may be affected due to cultural differences among different ethnic groups in Iran. According to results of current study it is suggested that the effect of spiritual care on adjustment ability in adolescents with other chronic disease be evaluated in future studies.

5- CONCLUSION

The present study confirms the effect of spiritual care in improving the adjustment of adolescents with type 1 diabetes. Adolescents with diabetes are facing a life-threatening illness, as well as the need for continuous care, with many tensions, regardless of gender and age, that makes them difficult to adapt. Therefore, adjusting to illness and self-care can be promoted by adding this care to nursing care.

6- CONFLICT OF INTEREST: None.

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