Coping strategies in Iranian mothers of children with type 1 diabetes

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Abstract

Purpose Having a child with type 1 diabetes as a stressor causes the use of coping strategies in mothers. The aim of this study was to investigate the coping strategies in mothers of children with type 1 diabetes and their relationship with stress management.

Methods This study was conducted on mothers of children with type 1 diabetes ($N = 180$) in Tehran and Karaj (Iran). Data were collected by a multi-sectional questionnaire that its validity and reliability were confirmed. Data were analyzed by SPSS software (v 19) and using statistical tests.

Results The highest mean score was related to problem-focused coping (22.11) and the lowest was related to emotion-focused coping strategies (12.2). Regression model showed that the variables of mother's age, problem-focused coping, and meaning-based coping had a positive effect, and variables of father's age and emotion-focused coping had a negative effect on stress management in mothers.

Conclusion Mothers of children with type 1 diabetes can be more successful in their stress management through using problem-focused and meaning-based coping approaches. Hence, the need for continuous education of effective coping strategies to these mothers is felt.

Keywords Coping strategies · Type 1 diabetes · Stress management · Mothers

Introduction

Living with a sick child is often perceived as a stressful factor for the family, which affects many aspects of the life of parents [1]. Parents of children with chronic diseases, as they face more parental problems, are more stressful than the parents of healthy children. These disturbances and stresses can be transmitted to the child and can negatively affect the development of emotions in children. In fact, children are highly sensitive to the mood of their parents, especially their mothers, and often imitate their behaviors

in a stressful situation as an approach for coping [2, 3]. This situation, regardless of culture and society, provides conditions for reducing mental health and increasing family problems [4].

Type 1 diabetes is increasing in children younger than 15 years and the number of these children is estimated to double in Europe between 2020 and 2055 ([5]). The prevalence of this disease is 7.7% in Iran and is on the rise [6].

Having a child with type 1 diabetes that is complicated disease in the self-management and the need for family collaboration in daily care makes it somehow different from other chronic diseases, exposes mothers to many stress which makes them to use coping strategies [2, 7].

In the documents of Lazarus and Folkman, coping is defined as cognitive and behavioral efforts that people use to manage internal or external stress [8]. There is a lot of evidence about the benefits of using coping strategies. In other words, the approach that each person chooses to coping, plays an important role in his physical and mental health and can lead to successful stress management [7].

Coping strategies are divided into three categories of problem-focused, emotion-focused, and meaning-based coping. In the problem-focused coping, the individual

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evaluates the stressful event and follows the paths that can be changed or managed [7, 9]. The problem-focused coping strategies used by mothers of children with type 1 diabetes include: asking for help and assistance from other family members, developing their communication and social networks, getting information about diabetes and rational attention to their child's needs [10].

In emotion-focused coping, people try to reduce their negative emotions. These strategies that used by mothers of children with type 1 diabetes include: decentralization to diabetes, blame and denial. Also, the meaning-based coping strategies includes reinterpretation, acceptance, use of the power of religion and spirituality, in which all kinds, interpretations of stressful situations are carried out in a meaningful way [7, 9, 10].

Whittemore et al. (2012) demonstrated in their study that the development of communication and social networks, the request for cooperation and assistance from others, the flexibility and rational attention to the needs of the child are the beneficial coping strategies that parents of children with type 1 diabetes use [11]. In a study by Jaser et al. (2014) in the United States, it was shown that the use of disengagement coping (such as denial of difficulty or avoidance of the problem) was the lowest among mothers of children with type 1 diabetes, and mothers who using these approaches were more stressed [12].

Salas et al. (2017), in their study in Spain, found that the parents of children with autism were more likely to use problem-focused approaches (such as social support seeking and problem-solving) in the relation to their children disease. In this study, it was also found that the use of the ineffective coping strategies (such as self-blame and avoidance of the problem) had a negative relationship with the life satisfaction in parents [13]. Also, in the study by Qodariah et al. (2016), in Indonesia on the mothers of children with autism, it was found that the use of problem-focused approaches was more common in mothers [14]. Norberg et al. (2005), on the parents of children with cancer in Sweden, showed that more use of the problem-focused coping and less use of the avoidance and denial approaches were associated with a higher level of anxiety and depression in parents [15].

The increasing prevalence of diabetes and this fact that there are very limited studies about the stress and coping strategies in mothers of children with type 1 diabetes in Iran and the world [2, 11, 12], and it is unclear how the mothers react to their children's illness, clarifies that it is necessary pay attention to this issue.

Considering the fact that mothers' behaviors have a profound effect on the child self-management, which is the most important factor in controlling diabetes and preventing its complications [16], this study aimed to investigate the coping strategies in mothers of children with type 1 diabetes in Tehran and Karaj (Iran).

Methods

Study design and setting

This cross-sectional study was conducted at Diabetes Association of Karaj, Tehran, and Endocrinology and Metabolism Research Institute. All mothers of children with type 1 diabetes who were members of these centers formed the statistical community of this study. The following inclusion criteria were used: having a child with type 1 diabetes, diagnosed since at least 1 year ago and consent to participate in the study.

Study size and data collection

Given that there were 340 active medical records in these centers, and according to Morgan table, the sample size was estimated at 181. The sample size was calculated proportional to the population under cover by each center. Then, according to the sample size calculated in each center, the researcher referred to the centers and selected mothers according to the inclusion/exclusion criteria. After thorough explanation of the research title and objectives to the participants, the researcher asked them to complete the questionnaires through available (convenience) sampling procedure.

Measures

The data gathering tool was a multi-sectional questionnaire: the first section consisted of demographic questions such as the gender and age of the child, the age and education of the parents and etc. The second section included the questions about coping strategies that was used from the Lazarus and Folkman model of stress and coping. Therefore, initial scales were designed by studying the related tools about coping of mothers with their child's disease [9, 17–19]. Then, the validity and reliability of the questionnaire was carried out.

In order to assess the face validity by qualitative method, 10 mothers were individually interviewed in terms of *difficulty of questions*, *relevancy*, and *ambiguous*, then their views were used to edit questions. In the quantitative method, the impact score was used and 10 subjects were asked about the importance of each item. The impact score of all items was higher than 1.5.

In order to assess the content validity by qualitative method, the questionnaire was provided to a group of health and psychology experts to assess the *grammatical errors*, *wording*, *item allocation*, and *scaling*. Then, necessary changes were made according to their perspective. Also the Content Validity Index (CVI) and Content Validity Rate (CVR) were used in the quantitative method of assessing the content validity.

In the final step, stability and internal consistency methods were used to determine the reliability. To measure internal consistency, Cronbach's alpha coefficient was obtained $\alpha > 0.7$. The stability was also evaluated using the "test-retest" method. In this stage, the Pearson correlation coefficient was measured to be 0.81–0.93 [19].

Finally, the tool was designed with 21 questions in three sections of problem-focused, emotion-focused, and meaning-based coping strategies. The problem-focused coping section includes 8 questions (such as: I am trying to consult with expert and aware people about my child's disease.) The emotion-focused coping section includes 7 questions (such as: I'm secluded about my child's illness and try to Avoid contact with others.) and the meaning-based coping section includes 6 questions (such as: I am trying to visit the pilgrimages and appeal to the Imams about my child's disease).

Also, in this study, we used the HPLPII scale, Walker et al. (1987) to investigate the effect of applying coping strategies on stress management in mothers. The stress management questionnaire has 8 questions (such as: Every day I spend time relaxing my nerves). The answers to these questions are based on the 4-part Likert scale. The validity and reliability of this scale have been verified in Iran [20].

The final questionnaire was distributed among 180 mothers with a child with type 1 diabetes. The answers were in Likert's 5-option range (from the "at all" to "always"), and a separate score was calculated by the sum of scores for each construct. The minimum and maximum total score of the tool is 0–84, for the problem-focused coping: 0–32, for the emotion-focused coping: 0–28, and 0–24 for the meaning-based coping section.

Statistical analysis

In this study, SPSS software (version 19) was used to analyze the data. Pearson correlation coefficient, independent t-test, one-way ANOVA and linear regression were used to evaluate the relationship between variables. A p value < 0.05 was considered statistically significant.

Results

In this study, the mean ages of the mothers, fathers and children were 38.7 ± 6.4 , 44.4 ± 6.2 and 11.12 ± 2.8 years, respectively. 62.2% of children were girls and 67.8% were the first children of the family. The mean of duration of diabetes in children was 7.03 ± 2.7 years. In terms of job, most of the mothers were housewives (80%) and most of the fathers were self-employed (41.7%). In terms of educational level, most mothers (43.3%) and fathers (42.8%) were graduate students (diploma). The majority of individual (43.3%) reported monthly family income in the range of 2 to 3 million Tomans. In response to this question that whether or not a

bad event occurred in your life in the last year, 77.8% of the mothers responded negatively.

The mean and standard deviation of the score of structures are shown in Table 1. Regarding the number of questions, the highest and lowest mean score was related to the problem-focused and emotion-focused coping, respectively. Pearson correlation coefficient test was used to investigate the relationship between these variables. According to Table 1, all variables had a significant relationship with each other.

Pearson correlation coefficient also showed that there was a negative and significant correlation between the mother's age with the emotion-focused and meaning-based coping and there was a positive and significant relationship with stress management. Also, there was a significant and negative relationship between the father's age with the emotion-focused coping, and a positive and significant correlation with stress management. Concerning the relationship between the child's age and the coping strategies, there was a positive and significant relationship between this variable with meaning-based coping, and negative and significant correlation with emotion-focused coping.

In this study, independent t-test also showed that there is a significant relationship between the emotion-focused coping and the child's birth rank. That means, the mothers who had their first child with diabetes use the emotion-focused strategies significantly more than other approaches. (Mean score 11.23 vs. 9.45, $p = 0.005$). Mothers' employment status also had a significant relationship with the meaning-based coping strategies. Mean score of meaning-based coping in housewife mothers was significantly higher than employed mothers (Mean score 11.20 vs. 8.47, $p = 0.000$). The incidence of bad events in mothers' lives was also related to the meaning-based coping; the mothers who mentioned that they had experienced an incident in the past year had a better situation in terms of positive interpretation, acceptance and application of religion and spirit, such as prayer (Mean score 15.33 vs. 13.72, $p = 0.039$).

The relationship between mother's and father's education level with the problem-focused coping and stress management was significant. The highest mean score was in higher

Table 1 Pearson's correlation coefficients for the coping strategies and Stress Management

	1	2	3	4	Mean (SD)
1	1				22.11 (5.4)
2	−0.209 **	1			10.66 (3.9)
3	0.392 **	−0.189 *	1		14.08 (4.3)
4	0.336 **	−0.330 **	0.219 **	1	9.58 (4.2)

1: problem-focused coping, 2: emotion-focused coping, 3: meaning-based coping, 4: stress management

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

education level compared to lower education level. ($p < 0.05$, ANOVA test).

Mother's field of study was also associated with problem-focused coping, meaning-based coping and stress management. The highest mean score was in the medical-health sciences and the lowest was in the accounting-management field ($p < 0.05$, ANOVA test).

Family income was also related to the problem-focused coping, the highest mean score were found in people with income less than 1.5 million tomans and the lowest mean score were found in people with income of 2–3 million tomans ($p = 0.030$, ANOVA test).

To evaluate stress management predictors, variables with a significant relationship (mother's age, father's age, mother's education, father's education, and mother's academic field, also with three constructs of coping strategies) entered the regression model through step by step method. According to Table 2, variables of mother's age, father's age and three coping strategies were a significant predictor of stress management in mothers. These variables were able to explain 35% of stress management variance.

Discussion

The aim of this study was to investigate the coping strategies in Iranian mothers of children with type 1 diabetes and their relationship with stress management. In this study, meaning-based coping was a positive and significant predictor of the stress management in mothers. A study by Laubmeier et al. (2004) on cancer patients had similar results in this regard. Their study also found that patients who were using more meaning-based coping approach had better quality of life. In general, researchers have emphasized that greater utilization of meaning-based coping reduces psychological distress and reduces the negative effects of stress in people who are exposed to long-term stress [21]. In the study of Watkins et al. (2017) on women with breast cancer also had a positive and significant effect on the use of meaning-based coping in reducing stress [22].

In this study, the use of emotion-focused coping strategies had a negative effect on maternal stress management. Chien et al. (2018) in terms of the patients with prostate cancer showed that using more emotion-focused coping strategies would be associated with the anxiety and stress among patients [23]. Older studies on the stress of mothers with sick children have also achieved similar results [24, 25]. Samuel-Hodge et al. (2008) also about patients with diabetes concluded that the people who used emotion-focused coping strategies were more stressful and had more inappropriate self-care behaviors, all of which were consistent with the findings of this study [26].

The regression model of the present study also showed that the use of problem-focused coping strategies is a positive predictor of stress management. In a study by Jaser et al. (2007) in mothers of children with type 1 diabetes, mothers who received less problem-focused coping score suffered more stress [27]. In an intervention study by Feldman et al. (2002) on mothers of child with intellectual and behavioral disorders, teaching coping strategies focusing on better management of the problem, showed that it led to meaningful improvement of stress management in mothers after intervention [28]. Lindquist et al. (1999) also showed in their study on occupational stress that more use of problem-focused coping strategies was associated with the lower stress levels [29]. Norberg et al. (2005) about parent of children with cancer showed that more use of problem-focused coping strategies and less use of denial approaches are related to lower levels of anxiety in parents [15].

But in a study by Pepperell et al. (2016) in Australia on coping strategies of parents with autistic children, mothers considered the use of emotion-focused coping strategies to reduce their stress and more likely to use this type of coping strategy [30]. The difference in this conclusion with the findings of our study can be explained primarily by the difference in child's illness. The next reason for this difference can be due to the younger age of children in the study of Pepperell et al. The mean age of these children was 49 months, which is much lower than in the present study. Various studies have shown that with the passage of time and increase age of child, the stress of the mothers is reduced, and they gradually take

Table 2 Stepwise multiple regression analysis of examining factors related to stress management

Model	Unstandardized coefficients		Standardized coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	.258	2.729		.094	.925
Mother's age	.425	.067	.649	6.351	.000
Father's age	−.260	.068	−.388	−3.823	.000
Problem-focused coping	.213	.052	.276	4.106	.000
Emotional –focused coping	−.230	.068	−.220	−3.384	.001
Meaning-based coping	.154	.066	.161	2.328	.021

a. Dependent Variable: Stress Management- R Square = 0.350

advantage of the problem-focused coping strategies and show more logical behaviors.

Conclusion

According to the findings, it is concluded that the mothers of a child with diabetes who use problem-focused coping strategies (such as: rational attention to the child's needs, normalizing the life style) and use the power of spirituality and the meaning-based coping strategies (such as communication with the God) can be more successful in managing their stress.

In addition, using emotion-focused coping strategies (such as: criticism, blame, reducing communication with others, denying reality) can negatively affect their stress management.

Hence, the need for continuous education of effective coping strategies under the supervision of health education professionals is felt for mothers of children with type 1 diabetes.

Limitations

Self-report of information and unwillingness of some mothers to respond to questions about their child's disease was a limitation of this study.

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Compliance with ethical standards

Conflict of interest Authors have no conflict of interest.

Ethical approval The present article is the result of a M.Sc. thesis in Health Education (under the code of ethics ABZUMS.REC.1396.137).

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