

Assesment of the effect of summer camp on the life quality of diabetic children

Semih Bolu, Aysegul Danis, Ilknur Arslanoglu, Filiz Bolu, Figen Akcali, Gulsen Aytar

Duzce University Medical Faculty Public Health Department, Duzce Turkey

Abstract

Aim: Type 1 diabetes which is a chronic metabolic disease can affect the quality of life of a person. The aim of this study is to evaluate the life quality of diabetic children and adolescents who are diagnosed with type 1 diabetes mellitus and compare the perceptions of life quality through the life quality scale before and after summer camp.

Materials and Method: A scale of life quality was applied to 31 children/adolescents with type 1 Diabetes Mellitus between ages 9-16 years in the Diabetes Summer Camp.

Results: The perceived quality of life of children / adolescents with type 1 diabetes were better after diabetes camp ($p < 0.05$). When the Quality of Life Scale scores compared by gender, it was found that the emotional well-being and self esteem subscale scores and the total scores of boys were statistically significantly higher after diabetes camp. But the Quality of Life Scale scores of girls did not show a significant increase.

Conclusion: This study showed that the diabetes camp, which promoted the ability of diabetic children and adolescents to manage their illnesses, changed the perception of quality of life of male diabetic patients in particular. However, repeating similar studies involving a larger number of cases will allow better evaluation of the results of such activities.

Keywords: Type 1 Diabetes; Quality of Life; Diabetes Camp.

INTRODUCTION

Type 1 diabetes mellitus (DM) is a chronic metabolic disease of childhood period that results in the destruction of pancreatic beta cells. Type 1 DM composes 5-10% of all diabetes cases (1). In order to reduce diabetic long-term complications, it is important that diabetic individuals have the ability to manage the disease well, along with multidose insulin therapy. Intensive treatment of Type 1 DM disrupts the daily activities of the patient and leads to being fed up with over time (2).

The way the diabetic individual manage diabetes affects the outcome of diabetes to a great extent. Diabetes care has become increasingly patient-centered in recent years. The Diabetes Control and Complications Trial Research Group (DCCT) has shown that intensive insulin therapy is necessary to provide better glycemic control in those patients and to reduce the risk of diabetes-related complications (3). In order to achieve this, numerous insulin injections, blood sugar measurements and carbohydrate counts as well as diabetes management training are required. The intensive treatment of these children places a burden on the child and family

relationships (4,5). Type 1 DM also affects one's health-related quality of life (6,7). It is important to know the health-related quality of life perceptions of children with type 1 DM so that this effect can be assessed (8-12).

According to the World Health Organization (WHO) quality of life expresses how individuals perceive their life positions in the cultural and values system they live in, in terms of their aims, expectations, interests and living standards. For this reason, the measurement of quality of life has a wider scope than the health-related criteria (13).

Knowing the perception of a patient's health-related quality of life makes it possible for physicians to understand the direction in which their patients are most affected by diseases, to direct their treatment, to make changes in treatment protocols, to strengthen the patient-physician relationship and to see how the physician-induced interventions affect the patient's quality of life (14).

This study aimed to assess the general quality of life of children with type 1 DM before and after the diabetic summer camp.

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Corresponding Author: Filiz Bolu, Duzce University Medical Faculty Public Health Department, Duzce Turkey
E-mail: bolufiliz@gmail.com

MATERIALS and METHODS

A Type 1 DM group was created consisting a total number of 31 children and adolescents, 19 girls and 12 boys aged between 9 and 16 who have participated in 5-day "Diabetes Summer Camp", organized by Department of Pediatric Endocrinology of Düzce University Faculty of Medicine.

The treatment team at the camp was composed of pediatrician, diabetes education nurse, social worker, pediatric endocrine professor and research fellow. The children aged 9 to 16 years participating the diabetes camp and their families were informed about the study and they completed the KINDL quality of life scale before the camp and on the fifth day of the activity. Permission has been obtained from the families before the camp to carry out medical initiatives and quality of life assessment.

This study is approved by Düzce University Clinical Research Ethics Committee with the protocol number: 2016/71.

Data collection Tools

KINDL (KINDER Lebensqualitätsfragebogen: Children Quality of Life-Questionnaire) is a general purpose health-related quality of life (HRQOL) measurement tool specially developed for children and adolescents. The KINDL scale is used for children with various chronic diseases to determine in which dimensions of life children are more affected by the disease or treatment. There are three editions of the KINDL scale used in different age groups, based on self-declaration. These are: Kiddy-KINDL for children aged 4-7 (Version applied via interviewer), Kid-KINDL for children aged 8-12, Kiddo-KINDL for children aged 13-16. In addition to these, there are two "parental forms" for young children (4-7 years) and older children and adolescents (8-16 years) whose quality of life can be indirectly assessed by their parents (15).

KINDL was developed in German and translated into 14 languages. Its adaptation to Turkish was made by Eser et al (16). Age specific versions take into account changes in the aspects of life quality in child development. The Kidd-KINDL questionnaire responded by the children and the Kiddo-KINDL questionnaire responded by the adolescents consists of 24 items and 6 dimensions with five-point sequential response option. The scale has six dimensions including; physical well-being, emotional well-being, self-esteem, family, friends and everyday functioning (school or nursery school/kindergarten).

Every dimension consists of 4 items. While The scores for the dimensions are calculated independently, the combination of six dimensions produce a total (HRQOL) score. In the Kiddy-KINDL (4-7 years) version consisting

of 12 questions, only the total score is calculated, unlike the other versions. KINDL can be used both in clinical and non-clinical areas in healthy children and children with chronic disease. Kid-KINDL items were scaled by a Likert scale measurement ordered from 1 (never) to 5 (always). According to the writing style of the question the items with negative orientations (Questions 1,2,3,6,7,8,15, 6,20,24) are scored by reversing.

The scores are calculated by adding up the scores of the items for every dimension and transformed into a scale based on 0-100 and then abstracted. Higher score is the indication of higher (HRQOL).

Previous studies have shown that KINDL is valid and reliable for the measurement of (HRQOL). The most important features of KINDL scale are; it is short, it can be filled in about 5 minutes, it is easy to apply and score by the researcher (17).

Evaluation of Data

SPSS for Windows 24.0 package program was used for statistical evaluations in this study. The normal distribution suitability of the variables was examined by the Kolmogorov-Smirnov / Shapiro-Wilk tests. Pre and postcamp Kindl scale scores were compared using Wilcoxon signed rank test. A p value <0,05 was accepted as statistically significant.

RESULTS

A total number of 31 children and adolescents that 19 girls and 12 boys aged between 9 and 16 participating the diabetes camp were included in the study. 38,7% of the diabetics participating in the study were male and 61,3% were female. The mean age of the group is 12.8 ± 2 , with the youngest diabetic participating in the study was 9 and the oldest diabetic was 16.

The median and minimum-maximum values of Kindl subscale scores and scale total scores are given in Table 1. When the pre-camp and post-camp tests were evaluated, it is seen that Pos-Camp scores are higher than Pre-camp scores except for "School" subscale. There is statistically significant difference in scale total scores and subscale scores for "Emotional well-being" and " Self esteem" before and after camping ($p=0.01$, $p=0.02$, $p=0.02$).

In Table 2 and Table 3, the mean of Kindl scores by gender were given. All scores after diabetes camp were higher in girls except Family and School subscale scores. But there was no statistically significant difference ($p > 0.05$). Total scores, Post-Camp Self-esteem subscale scores and Emotional Well-Being subscale scores in males are statistically significantly higher than Pre-Camp ($p=0.05$, $p=0.04$, $p=0.01$). In males, other subscale scores are higher at Post-Camp compared to Pre-Camp scores, but there is no statistically significant difference ($p > 0.05$).

Table 1. Participants' pre-camp and post-camp Kindl scores

	Pre-Camp (n=31)		Post-Camp (n=31)		p ^a
	Median	Min-Max	Mean	St Deviation	
Physical well-being	75.00	31.25-100.00	75.00	18.75-100.00	0.17
Emotional well-being	75.00	12.50-100.00	81.25	12.50-100.00	0.01
Self-esteem	62.50	12.50-100.00	68.75	18.75-100.00	0.02
Family	81.25	25.00-100.00	87.50	6.25-100.00	0.34
Friend(s)	75.00	25.00-100.00	81.25	18.75-100.00	0.41
School	68.75	25.00-87.50	62.50	31.25-93.75	0.94
Total Quality of Life	71.87	34.38-88.54	76.04	26.46-91.67	0.02

^a:Wilcoxon signed ranks test

Table 2. Comparison of pre-camp and post-camp Kindl scores by girls

	Pre-Camp (n=19)		Post-Camp (n=19)		p ^b
	Mean± Std ^a	Median (Min-Max)	Mean±Std ^a	Median (Min-Max)	
Physical well-being	64.80±17.9	68.75 (31.25-87.50)	66.44±17.9	68.75 (18.75-87.50)	0.51
Emotional well-being	65.46±25.1	75.00 (12.50-100.00)	85.41±12.8	75.00 (12.50-100.00)	0.15
Self-esteem	57.89±25.9	56.25(12.50-100.00)	63.48±25.8	75.00 (18.75-100.00)	0.21
Family	76.64±24.7	87.50 (25.00-100.00)	75.32±29.3	87.50 (6.25-100.00)	0.86
Friend(s)	67.76±22.7	75.00 (25.00-93.75)	70.06±23.1	75.00 (18.75-100.00)	0.66
School	62.17±18.0	68.75 (25.00-87.50)	59.34±16.4	62.50 (31.25-93.75)	0.39
Total Quality of Life	65.78±15.4	70.83 (34.38-88.54)	67.73±18.0	75.00 (26.46-88.54)	0.36

^a: Standart deviation

^b:Wilcoxon signed ranks test

Table 3. Comparison of pre-camp and post-camp Kindl scores by boys

	Pre-Camp (n=12)		Post-Camp (n=12)		p ^b
	Mean± Std ^a	Median (Min-Max)	Mean±Std ^a	Median (Min-Max)	
Physical well-being	80.72±12.6	81.25 (62.50-100.00)	85.41±12.8	87.50 (68.75-100.00)	0.16
Emotional- well-being	73.43±18.2	71.87 (31.25-100.00)	85.41±12.8	84.37 (68.75-100.00)	0.05
Self-esteem	60.93±15.7	65.62 (31.25-81.25)	73.95±18.8	68.75 (43.75-100.00)	0.04
Family	76.56±15.3	75.00 (56.25-100.00)	85.93±12.5	87.50 (62.50-100.00)	0.07
Friend(s)	80.20±14.0	78.12 (62.50-100.00)	82.81±12.2	84.37 (56.25-100.00)	0.43
School	60.41±14.6	62.50 (37.50-87.50)	65.10±10.4	62.50 (43.75-75.00)	0.35
Total Quality of Life	72.04±9.4	72.91 (59.38-87.50)	79.77±8.1	76.56 (68.75-91.67)	0.01

^a: Standart deviation

^b:Wilcoxon signed ranks test

DISCUSSION

In children and adolescents with Type 1 DM, frequent control of blood glucose and frequent injection of insulin can be regarded as factors to reduce quality of life. After being diagnosed with the disease, they had difficulties in adapting the new conditions in the beginning but it is known that they adapted to disease over time and their quality of life which deteriorated at first had increased (18). However, many researchers have shown in their studies that children with chronic illness are at high behavioral, cognitive, emotional and social risk. Studies of adolescents with type 1 diabetes have shown that

even if patients reach their target HbA1c levels, they think diabetes has a negative impact on their lives and diabetes management is difficult (19). However, another study involving more than 2,000 adolescents with Type 1 diabetes found that a better HbA1c target was associated with lower anxiety and better health perceptions in young people (20). In order to provide good metabolic control in diabetes, every patient should be educated; provided with awareness-raising and motivation initiatives along with adequate medical treatment.

One of the activities to increase motivation in patients is camp activity. The most important goal of camps

organized for children with type 1 DM is, apart from reviewing their information on diabetes management, sharing their experiences with diabetes in the camp, observing their ability to cope with diabetic problems, and thus gaining self confidence. In a study by Kaufmann et al, stated that the treatment team in the camp informed the children about the illness, supported them physically and mentally and this has provided individuals with diabetes the ability to manage their own illnesses (21).

In our study, a total 31 type 1 diabetic children by applied KINDL quality of life scales were found to have significantly improvement in perception of quality of life after diabetes camp. This study has been encouraging for our future activities. However, according to gender, we found no improvement in the perceptions of quality of life by girls. To determine the cause of the difference by gender the study can be applied in a wider diabetic group.

In a study conducted by Sawyer et al, changes in the perceptions of children with chronic illnesses on quality of life were examined over time. While there was no apparent improvement in the quality of life perceptions of children with cystic fibrosis in chronic diseases over a period of two years, but children with asthma and type 1 DM were reported to have an increased quality of life perceptions (23). In a study carried out by Laffel et al. using Quality of Life Scale for Children, 100 children and adolescents with type 1 DM were assessed, general quality of life perceptions of healthy children and adolescents were found similar to those of children with type 1 DM (24). Other studies reported that children with type 1 DM generally did not have serious psychosocial problems and that the problems seen were related to emotional, social, and peer relationships (25,26,27). A descriptive cross-sectional study of the economic situation involving three hundred diabetic patients showed that the social class had significant effects on quality of life and compliance with treatment (28). Another study with adolescents with type 1 DM by Graue et al reported that health-related quality of life perceptions were not affected by HbA1c but age and gender were influential. In the same study, it was found that adolescents with type 1 DM had worse quality of life perceptions compared to the healthy group (29).

Activities such as diabetes summer camps are aimed at positive changes in quality of life with factors such as; diabetic individuals' interacting with each other and the health team, improving their ability to manage disease with other diabetic children, supporting each other and increasing their motivation.

CONCLUSION

Summer camps for the diabetics bring diabetic children together regardless of their social situation. The activities of the camps help children interact with other diabetic children. This is expected to increase their perception of quality of life and help them adapt the treatment better.

This study showed that the diabetes camp changed the perception of quality of life of male diabetic patients in particular. However, repeating similar studies involving a larger number of cases will allow better evaluation of the results of such activities.

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