The Efficiency of the Triple P Program for Parents of Children with Type-1 Diabetes

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ABSTRACT

Aim: The aim of this study was to investigate the effect of the Triple P-Positive Parenting Training Program which was applied to the parents of children and adolescents with type 1 diabetes (T1D) diagnosis aged 3-12 years on parental attitude, parental mental health, and child behavior.

Materials and Methods: The research was conducted in a quasi-experimental manner. The sample of the research consisted of 32 parents who had children with T1D diagnosis aged 3-12 years and who agreed to participate in the study. Data were collected using the Family Background Questionnaire, General Health Questionnaire, Strengths and Difficulties Questionnaire, Parental Attitude Research Instrument, Conflict Behavior Questionnaire and Parent Satisfaction Questionnaire. Group Triple P Programme was implemented with the all group for 8 weeks. Data were collected immediately after the programme. Data were evaluated by using multidirectional variance analysis, t-test and chi-square test.

Results: It has been shown that the Group Triple P applied to the parents of the children who had children with T1D diagnosis positively affects the mental health of the parents, their parental attitudes and the problematic behaviour of the children and the parents had less conflict with their children and the children had less conflict with their parents.

Conclusion: It is suggested to carry out studies in different centers and cities with Group Triple P Programme, to widen the use of Group Triple P Programme, to plan researches where Group Triple P programme and other programmes currently used in country would be compared.

Keywords: Group triple p programme, behavioral problems, parenting style, parental mental health, type 1 diabetes

Introduction

Developments in the fields of health and technology over the past 20 years have led to an increase in the number of children who have a chronic disease (1,2,3,4). Diabetes has become one of the most common chronic diseases among children as its incidence has increased (5). It is estimated that 70,000 children under the age of 15 years develop type 1 diabetes (T1D) each year (6). Moreover, in the United States, it is reported that 400-600 children are diagnosed with T1D annually.

T1D management is a time-consuming, complex, and difficult process. Diabetes requires continuous and good treatment management throughout life (7). Good diabetes management involves paying attention to diet and exercise, monitoring blood glucose levels during the day, injecting insulin or using an insulin pump, and being able to respond to urgent medical conditions (8). Parents are fully or primarily responsible for diabetes management in children depending on the child’s age (9,10). The results obtained in the studies suggest that the responsibility of diabetes management should be gradually transferred to children under parents’ supervision until children or adolescents take the responsibility...
of primary treatment alone (3,11,12,13).

Parents have a very important role in children’s diabetes management; however, efficient T1D management requires the cooperation of both parents and children (12,13,14). Noncompliance to treatment may lead to important short- and long-term consequences for a child’s health and poor management of diabetes can cause serious health complications (9).

Parents- and family-related factors affect the compliance to treatment and glycemic control levels of children with T1D. The children of extremely indulgent families (9,15,16,17) and families with conflicts and authoritarian parents (9,13,18) have less child welfare, low self-efficacy, increased depression, and increased behavioral problems (19). On the other hand, families with effective communication and democratic attitudes increase the compliance to treatment in their children and diabetes management is handled successfully (9,15). In contrast to the disease-related factors that cannot be changed (for example, the age of disease onset and the severity of the disease), parenting can be changed and good parenting practices can be developed.

Studies have shown the effectiveness of interventions to reduce family conflicts and increase family communication and child welfare for children with diabetes (9,12,13).

Triple P-Positive Parenting Program is the most effective parent program in the world and cooperates with families and society, reduces risk factors, supports protective factors, has a multidisciplinary approach, has high evidence standards, uses randomized controlled studies, and obtains long-term results. (9,20,21). The theoretical structure of the program has been based on social learning principles and cognitive theory. The program aims to create a positive relationship between child and parents, develop positive parenting skills, support child's talents and development, enable child to gain skills for the management of problematic behaviors, teach effective communication skills to couples, and reduce parental stress (21,22,23,24). Strong evidence regarding the efficiency of preventive and clinical interventions presented in various ways has been obtained in randomized controlled and meta-analysis studies conducted on the Triple P-Positive Parenting Program (25,26,27,28).

A limited number of studies on the Triple P-Positive Parenting Program have been conducted with the parents of children with T1D diagnosis. In the randomized controlled study conducted by Westruppet et al. (30) with 76 parents, it was determined that the parents had better mental health, the problematic behaviors of children decreased, and there was no change in glycemic control level after the Triple P-Positive Parenting Program. In another study conducted by Doherty, Calam, and Sanders, it was found that family conflicts, especially disease-related ones, decreased after the Triple P-Positive Parenting Program applied to parents of adolescents with T1D aged between 11-17 years (31).

According to the results obtained from these studies conducted with different samples in Turkey, it has been determined that there is a need to carry out studies with the Triple P-Positive Parenting Program with at different clinics and schools (32,33,34,35). When the studies conducted regarding the Triple P-Positive Parenting Program in Turkey so far were considered, it was seen that there has been no study conducted with families with diabetic children. Furthermore, the number of studies conducted in other countries is quite limited.

In our country, there is a need for the implementation of the Triple P-Positive Parenting Parenting Program that will meet the needs of parents and that will be easily accessed by every walk of life and to extend the program by making it functional.

The aim of this study was to investigate the effect of the Triple P-Positive Parenting Program which was applied to the parents of children and adolescents with T1D diagnosis aged 3-12 years on parental attitude, parental mental health, and child behavior.

### Materials and Methods

“Single Group Pre-test - Post-test Model”, one of the quasi-experimental designs, was used to evaluate the effect of the Triple P-Positive Parenting Program which was applied to the parents of children with T1D diagnosis aged 3-12 years in a university hospital in Bursa on parental attitude, parental mental health, and child behavior.

The study was conducted together with Uludag University Hospital Child and Adolescent Mental Health Clinic and Clinic of Pediatric Endocrinology. The training sessions were held between December 2014 and January 2015.

The sample of the research consisted of 32 parents who had children with T1D diagnosis aged 3-12 years and who agreed to participate in the study after the necessary explanations were made without any sampling method.

The inclusion and exclusion criteria of the study were taken into account while selecting parents. In this respect, the sample characteristics can be explained as follows:

- Parents of children with T1D
- Parents of children without mental retardation, autism, psychosis, schizophrenia, bipolar disorder, obsessive-compulsive disorder, diffused developmental disorder
- Parents living with their child (both mother and father or only mother or father)
- Non-divorced parents, parents living together
- Parents who have not received any mental assistance for parenting education
- Parents who read the informed consent form and who wanted to participate in the study

Written permit (Decision Number: 2013-14/19) was obtained from the Ethics Committee of Bursa Uludag University Hospital. In the research, the parents were informed that the data obtained will be reported without giving a name to protect their privacy and that their names will be kept confidential.
Data Collection Tools

Socio-demographic Data Collection Form: This form consists of 19 questions regarding parents’ families, education and occupation and information about the health status of the parent and child.

Parental Attitude Research Instrument (PARI): The scale was developed by Schaefer and Bell (1958) in order to determine the child-rearing attitudes of parents and adapted to Turkish by LeCompte, LeCompte, and Ozer (1978) (36). The scale can be applied to parents, children, and youngs. It consists of 60 items and 5 subdimensions. High scores indicate that the respondent supports the attitude expressed in the relevant subdimension. High scores obtained from other subdimensions except for democratic approach/ensuring equality indicates a negative parental attitude. When an evaluation was made in terms of psychometric characteristics, the scale was repeatedly applied to a group of 34 female students at three-week intervals for the test-retest reliability of the scale and the Spearman Correlation coefficients were found between .58 and .88. The scale was then applied to 179 mothers from three socio-economic levels, low, middle, and high. As a result of the analysis conducted, it was determined that each subdimension had a high internal consistency and that the half alpha internal consistency was .64. As a result of factor analysis, four factors were identified and a fifth factor was identified from the rest of the items. In the final form of the scale, the internal consistency of the subdimensions ranged between .59 (democratic approach/ensuring equality subdimension) and .90 (strict discipline subdimension). For the factor validity of the scale, the correlation between mothers’ socio-economic levels and 5 factors was examined. Accordingly, there was a negative correlation found between SEL and extreme motherhood/overprotection and strict discipline subdimensions and a positive correlation between SEL and other factors (36).

Strengths and Difficulties Questionnaire (SDQ): The Strengths and Difficulties Questionnaire (SDQ) was developed by Robert Goodman in 1997 and is used to screen mental problems in children and adolescents. The Turkish validity and reliability study of the scale was conducted by Güvenir et al. (37). This questionnaire includes a parent and teacher form for those aged 4-16 years and an adolescent form, which is filled out by the adolescent by him/herself, for those aged 11-16 years. The SDQ consists of 25 questions, some of them regarding positive and some of them regarding negative behavior characteristics. These questions are divided into 5 sub-problem areas. These are behavioral problems, attention deficit and hyperactivity, emotional problems, peer problems, and social behaviors. As a result of the SDQ scoring, sub-scores specific to these problem areas can be reached as well as the total score. The SDQ includes items that question psychiatric symptoms and the level of exposure from symptoms. In this section, the respondent evaluates whether the adolescent has difficulty in the emotions, behaviors, attention, and relationship with others. If one’s response indicates difficulty, the person reports whether this difficulty puts the child and adolescent into distress, whether it affects the daily life, whether it challenges people who live together, and how long the difficulties exist (37).

General Health Questionnaire-12 (GHQ-12): The General Health Questionnaire is a questionnaire that is used as a primary screening test in social studies examining mental diseases. The 12-question General Health Questionnaire is extensively preferred since it is short, has high sensitivity and specificity in distinguishing cases and can be used in various socio-cultural environments (38). The Turkish validity and reliability study was conducted by Kılıç (1996). The lowest score that can be taken from the scale is 0 and the highest score is 12. The increase in the score refers to the risk of mental disease. A score of 2 points or more in the 12-item form of the general health questionnaire indicates a high possibility to have a psychiatric disorder. In the literature, the concepts of “distress”, “well-being”, and “mental health” are assessed using the general health questionnaire (38).

Conflict Behavior Assessment Questionnaire: The questionnaire was developed by the researcher by reviewing the literature to investigate the conflict behaviors of the children to their parents and of parents to their children (39). For the content validity of the form prepared, opinions of 3 experts, one faculty member of psychiatry nursing and two child and adolescent psychiatry physicians, were obtained. The questionnaire was finalized considering the feedbacks from expert opinions. It consists of a parent form (20 items) and a child form (20 items for the mother, 20 items for the father). Each item has two options, “yes” and “no”. Both options cause a score increase in some items. A high score indicates that many conflicts are experienced between the child and his/her parent in both ways and that they do not show appropriate behavior during the conflict (39).

Satisfaction Questionnaire: The questionnaire was prepared by the researcher by reviewing the literature in order to determine the opinions and satisfaction levels of the parents after the Triple P-Positive Parenting Program (39). For the content validity of the form prepared, opinions of 3 experts, one faculty member of psychiatry nursing and two child and adolescent psychiatry physicians, were obtained. The questionnaire was finalized considering the feedbacks from expert opinions. It consists of 14 items, 11 closed-ended and 3 open-ended. The highest score that can be obtained from the questionnaire is 77 and the lowest score is 11. As the score increases, parents’ satisfaction with the Triple P-Positive Parenting Program increases, as well (39).

HbA1C Level: HbA1C levels of the children with TID were obtained from laboratory results before and after the Triple P-Positive Parenting Program.

Intervention Program

The Triple P-Positive Parenting Program provides specific information that helps parents who participate in the
program to encourage the development of their children, reduce problematic behaviors, and reduce or eliminate risky situations that endanger the health of the child. The program which is organized for parents of children aged 0-12 years consists of 8 sessions. First, four two-hour group sessions are held for groups of 10-12 parents. After these sessions, three 15-30 minute-phone calls are conducted with each parent and a final closing session is held (Session 8). Follow-up phone calls provide additional support to parents who implement what they learned in group sessions. The closing group session allows parents to assess their progress and share their achievements. Both parents (when conditions are appropriate) are encouraged to participate (21,22,24).

**Statistical Analysis**

The data were evaluated using the 22.00 SPSS package software. The significance level (Type I Error) was determined to be .05 in the study. The t-test was used to assess the effect of the intervention on dependent groups.

**Results**

The descriptive characteristics of the parents included in the research are given in Table I.

The parents scored 40.09 points from Overprotection subdimension of the Parental Attitude Research Instrument before the Triple P-Positive Parenting Program and 35.27 points after the program; 29.41 points from Democratic Approach/Ensuring Equality subdimension before the training and 33.01 points after the training; 14.18 points from Marriage Conflict subdimension before the training and 12.07 points after the training; 34.66 points from Strict Discipline subdimension before the training and 30.86 after the training (Table II).

There was a statistically significant difference found between the pre- and post-training mean scores from the subdimensions of Overprotection (t=5.62 p=0.000), Democratic Approach/Ensuring Equality (t=3.41 p=0.001), Marriage Conflict (t=2.98 p=0.000), Strict Discipline (t=4.24 p=0.000). On the other hand, from the Denial of Housewife Roles subdimension, the parents scored 28.79 before the training and 27.23 after the training. When the pre- and post-training mean scores from Denial of Housewife Roles subdimension (t=-0.72 p=0.52) were compared, there was no statistically significant difference found (Table II).

The score obtained from the Strengths and Difficulties Questionnaire was 15.81 before the Triple P-Positive Parenting Program and 10.01 after the program. According to the result of the t-test which was conducted to evaluate whether there was a difference between the scores of adolescents from the strengths and difficulties questionnaire before and after the program, the difference between the two mean scores was found to be statistically significant (t=7.79 p=0.000) (Table III).

The score of the parents obtained from the general health questionnaire was 5.45 before the Triple P-Positive Parenting Program and 2.19 after the program. According to the result of the t-test which was conducted to evaluate whether there was a difference between the scores of the parents from the general health questionnaire before and after the program, the difference between the two mean scores was found to be statistically significant (t=5.54 p=0.000) (Table III).

The score of the parents obtained from the conflict behavior questionnaire was X:13.18 before the Triple P-Positive Parenting Program and X:10.09 after the program.

<table>
<thead>
<tr>
<th>Table II. Mean Scores of Parents from Parental Attitude Research Instrument Subdimensions Before and After the Program</th>
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<tr>
<td><strong>Parental Attitude Research Instrument (PARI) Subdimensions</strong></td>
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<tr>
<td>Overprotection</td>
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<tr>
<td>Democratic Approach/Ensuring equality</td>
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<td>Denial of Housewife Roles</td>
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<td>Marriage Conflict</td>
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<td>Strict Discipline</td>
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<th>Table I. Descriptive Characteristics of Parents Included in the Research</th>
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<tr>
<td><strong>Variables</strong></td>
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<tr>
<td>Age</td>
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<td>25-35 years</td>
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<td>36-45 years</td>
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<td>46-55 years</td>
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<td>56-65 years</td>
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<td>Educational status</td>
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<td>Primary school graduate</td>
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<td>Secondary school graduate</td>
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<td>High school graduate</td>
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<td>University graduate</td>
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<td>Post-graduate</td>
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<td>Occupational status</td>
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<td>Housewife</td>
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<td>Government officer</td>
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<td>Retired</td>
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<tr>
<td>Worker</td>
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<tr>
<td>Unemployed</td>
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<tr>
<td>Health Status of Parents</td>
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<tr>
<td>I received help in the last 6 months</td>
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<tr>
<td>I did not receive help in the last 6 months</td>
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<tr>
<td>Previous participation in a parenting training program</td>
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<tr>
<td>Yes</td>
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<td>No</td>
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<td>TOTAL</td>
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According to the result of the t-test which was conducted to evaluate whether there was a difference between the scores of the parents from the conflict behavior questionnaire before and after the program, the difference between the two mean scores was found to be statistically significant (p<0.05). (Table III).

The score of the children obtained from the conflict behavior questionnaire was X:14.10 before the Triple P-Positive Parenting Program and X:11.45 after the program. According to the result of the t-test which was conducted to evaluate whether there was a difference between the scores of the adolescents from the conflict behavior questionnaire before and after the program, the difference between the two mean scores was found to be statistically significant (p<0.05) (Table III).

The HbA1C value of the children was 8.17 before the Triple P-Positive Parenting Program and 7.92 after the program. When pre- and post-training HbA1C values were compared, no statistically significant difference was found (t=-0.43 p=0.338) (Table III).

Parents’ level of satisfaction with the Triple P-Positive Parenting Program was 73.80 out of a total score of 77 (Table III).

**Discussion**

In the study, the Triple P-Positive Parenting Program applied to the parents of children with TID had a significant improvement in parental attitudes and mental health levels of parents, in reducing the problematic behaviors of children and in reducing family conflicts.

In the study, when the difference in the Parental Attitude Research Instrument (PARI) score after the Triple P-Positive Parenting Program was evaluated, it was found that there was a significant decrease in the subdimensions of Overprotection, Democratic Approach/Ensuring Equality, Marriage Conflict, and Strict Discipline. However, there was no difference was found in Denial of Housewife Roles subdimension. This suggests that the Triple-P Positive Parenting Program may be beneficial to the attitudes of parents of children with TID diagnosis. Considering the related studies, two studies that were conducted with the parents of children diagnosed with T1D draw attention. In the randomized controlled study conducted by Westruppet et al. (30) in 2015 with 76 parents, it was found that there were significant changes in the Over reactivity subdimension of the Parenting Scale after the Triple P-Positive Parenting Program. In another study conducted by Doherty, Calam, and Sanders in 2013, it was determined that there were positive differences in the attitudes of parents after the Triple P-Positive Parenting Program applied to the parents of adolescents with T1D aged 11-17 years (31). These results indicate that the Triple P-Positive Parenting Program reduces behavioral disorder (32), attention deficit and hyperactivity disorder (34), anxiety disorder (33), and dysfunctional parenting practices such as sending the child to a Montessori school (35) and increases positive or democratic parental attitudes.

In our study, there was a significant decrease in the SDQ scores of children after the Triple P-Positive Parenting Program. This shows that the Triple-P Positive Parenting Program applied to the parents of children with T1D diagnosis reduces the emotional and behavioral problems of children. This finding is similar to that in the study conducted by Westruppet et al. (30) and Doherty et al. (31) with parents of children diagnosed with T1D. In both studies, the problematic behaviors of children and adolescents were found to decrease after the Triple-P Positive Parenting Program.

The study findings show similarity with those obtained in the other studies conducted on the Triple P Program with different samples and by using SDQ (32,40,41,42,43,44). In the study conducted by Arkan (32), which was the first study on the Triple P Positive Parenting Program in Turkey, in the study conducted by Özyurt et al. (33) with the parents of children diagnosed with anxiety disorder, in the randomized controlled study conducted by Martin and Sanders in 2003 (41), in the randomized controlled study conducted by Leung et al. in 2003 (43) with 69 parents, in the study conducted by Stallman et al. (45), and in the study conducted by Sanders et al. (42), which was initiated as a large project in 2008 and conducted with 2996 parents, it was found that the total score of the children and adolescents from the difficulty subdimension of strengths and difficulties questionnaire decreased as it did in our study. When the findings of these studies and our study are evaluated together, it is suggested that the Triple P Positive Parenting Program is an effective and successful parent program in reducing children’s behavioral and sensory problems. Considering that the Triple-P Positive Parenting Program improves parents’

| Table III. Mean Scores of Parents from the Questionnaires Before and After the Program (N:32) |
|-------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| **Questionnaires**                                    | **Pre-test**    | **Post-test**   | **t**           | **p**           |
|                                                      | X ± SD          | X ± SD          |                 |                 |
| **Strengths and Difficulties Questionnaire**          | 15.81±5.90     | 10.01±2.53      | 7.79            | .000            |
| **General Health Questionnaire**                      | 5.45±3.18      | 2.19±2.63       | 5.54            | .000            |
| **Conflict Questionnaire (Parent)**                  | 13.18±3.92     | 10.09±2.72      | 5.80            | .000            |
| **Conflict Questionnaire (Adolescent)**              | 14.10±2.95     | 11.45±1.88      | 8.25            | .000            |
| **Satisfaction Questionnaire**                        | ........        | 73.80±2.87      | ........         | ........         |
| **HbA1C (mmole/mole)**                                | 8.17           | 7.92            | -0.43           | .338            |
self-efficacy, self-efficiency, and self-control characteristics, it is very important to shape the behaviors of parents and children together, strengthen the self-efficacy perceptions of parents, and develop self-regulation skills of parents in the treatment of behavioral and emotional problems of children and adolescents (22,42,46).

Another important finding regarding parents was that their general health questionnaire score was lower after the Triple-P Positive Parenting Program. This result shows that the stress and anxiety levels of the parents decreased significantly after the program. Westruppet et al. (2015) (30) evaluated stress, anxiety and depression levels of parents before and after the program separately and reported that the anxiety and stress levels of parents highly decreased. In the study conducted by Doherty et al. (31), there was no statistically significant difference found in the stress levels of parents after the program. Contrary to the study conducted by Doherty et al. (31), the studies conducted on the Triple P Program with different samples in the world (47,48,49) and in Turkey (32,33,34,38), it is seen that the program reduces parents’ stress, anxiety, and depression levels. It is clearly seen that the Triple-P Positive Parenting Program is more successful in reducing parents’ stress, anxiety, and depression levels compared to other parent programs. This can be explained by the fact that the Triple P-Positive Parenting Program meets mostly parents’ needs and strengthens parents more.

One important finding obtained in our study is that the program reduces the tendency to have conflict both in parents and children and reduce the level of family conflicts. This finding is similar to those in two studies conducted on the Triple P-Positive Parenting Program. In the studies conducted by Westruppet et al. (30) and Doherty et al. (31), the characteristics and quantity of family conflict were evaluated with the Diabetes Family Conflict scale. In both studies, it was revealed that there is a significant difference in the level of conflict after the program. Conflicts between the parents and the child affect the treatment management of the child with T1D quite negatively. Ending or reducing family conflicts is of great importance for successful treatment management. These results reveal that the Triple P-Positive Parenting Program is highly effective in reducing parents’ tendency to engage in conflict with each other and reducing family conflicts.

Another finding obtained in our study is that there was no significant difference in HbA1C values of children before and after the Triple P-Positive Parenting Program. This result is similar to those obtained in the studies conducted by Westruppet et al. (30) and Doherty et al. in 2013 (31). In both studies, it was found that there was no difference in the HbA1C values of children at 3rd, 6th, and 12th-month follow-ups after the program. Both in our study and in the study conducted by Westruppet et al. (30) and Doherty et al. (31), there was a decrease in HbA1C values of children; however, this decrease was not found to be statistically significant.

Study Limitations

This study is important since it is the first study conducted in Turkey, in which the Triple P-Positive Parenting Program was applied to the parents of children diagnosed with T1D. However, besides the positive results revealed, there are some limitations of the study. The main limitation is the small sample size. Another limitation is the no use of randomized controlled study design. In light of these preliminary results, future studies should be planned with a randomly selected control group in order to show the effectiveness of this parent program more strongly. In addition, if possible, another parent program should be applied to the control group in our country. The third most important limitation is that the no follow-up process was planned in order to demonstrate the permanence of the positive and healing effect of the program. Future studies or a study with the current sample group should be planned with at least a 6-month or 1-year follow-ups. This is important in terms of showing the long-term efficacy determined in the literature for the Turkish sample.

Conclusion

In conclusion, it was determined that the Triple P-Positive Parenting Program reduced the General Health Questionnaire and Parental Attitude Research Instrument scores of the parents and the Strengths and Difficulties Questionnaire and Conflict Behavior Assessment Questionnaire scores of the children with T1D. In addition, parents’ level of satisfaction with the program was quite high. Due to the many factors affecting the HbA1C level, the decrease in the HbA1C value of the children was not at the desired level. These results show that the Triple P-Positive Parenting Program applied to the parents positively contributes to the mental health of the family. Therefore, it is recommended to plan new studies with randomized controlled study design and a larger sample, in which prospective follow-up sessions are planned, to conduct research in which the results of the Triple P-Positive Parenting Program and currently applied programs in our country are compared, and to extend this program throughout the country.

Ethics

Ethics Committee Approval: Written permit (Decision Number: 2013-14/19) was obtained from the Ethics Committee of Bursa Uludağ University Hospital.

Informed Consent: Written, informed consent was obtained from all parents.

Peer-review: Enternally and internally peer-reviewed.

Authorship Contributions

References

31. Doherty FM, Calam R, Sanders MR. Positive parenting program (Triple P) for families of adolescents with type 1


