

Original Article

Effect of Family Life and Child Rearing Attitudes on Metabolic Control of Adolescents with Type 1 Diabetes Mellitus

Turkan Kadiroglu, RN

Instructor, Department of Health Nursing, University of Ataturk, Faculty of Health Sciences, Erzurum-Turkey

Handan Zincir, RN, PhD

Instructor, Department of Public Health Nursing, University of Erciyes, Faculty of Health Science, Kayseri-Turkey

Correspondence: Turkan Kadiroglu, Instructor, Department of Health Nursing, University of Ataturk, Faculty of Health Sciences, Erzurum-Turkey E-mail: t.kadiroglu@atauni.edu.tr

Abstract

Background: Type 1 Diabetes Mellitus is related with both the patient and family.

Aim: To determine the possible effect of family life and child rearing attitudes on metabolic control of adolescents with Type 1 Diabetes Mellitus.

Methods: The study was composed of 75 adolescents with Type 1 Diabetes Mellitus and their mothers. A questionnaire form including questions relating the adolescent and family, Parental Attitude Research Instrument and Metabolic Control Measurement Form were used for data collection. Data were obtained from adolescents, their mothers who gave oral and written consent and from information on patient files. Descriptive statistics, Pearson correlation and Cronbach's Alpha test were performed in computer with statistic package programs.

Results: There was a positive correlation between fasting blood glucose levels of adolescents with Type 1 Diabetes Mellitus and category of husband-wife conflict of Parental Attitude Research Instrument ($p < 0.05$). There was a negative correlation between HemoglobinA1c levels of adolescents with Type 1 Diabetes Mellitus and democratic attitudes of their mothers ($p < 0.05$).

Conclusions: It is found that adolescents' mothers are tolerant and protective towards them. Family life and child rearing attitudes found to have impact on fasting blood glucose and HemoglobinA1c levels but not on body mass index in adolescents with Type 1 Diabetes Mellitus.

Key Words: Type 1 diabetes mellitus, adolescent, metabolic control,

Background

Type 1 Diabetes Mellitus (DM) is a leading condition among chronic diseases seen in the ages of 0-18 years (Kharroubi & Darwish, 2015; Maahs, West, Lawrence, & Mayer-Davis, 2010; Zheng & Chen, 2013). It frequently begins at 10-15 years of age (Barnard, Thomas, Royle, Noyes, & Waugh, 2010). Type 1 DM is related with both the patient and family and causes irreversible complications in addition to organ and function losses because of bad metabolic control which unfavorably affects quality of life (Barnard et al., 2010; Wright, 2009). Being incident in adolescence makes this disease cause more troublesome prognosis (Celik, Kelleci, &

Satman, 2015; Moghanloo, Moghanloo, & Moazezi, 2015).

Regular insulin injections, dietary treatment and exercising in the treatment of Type 1 DM require a different life style for the patients compared with other adolescents. The patients who are afraid of being excluded by other healthy fellows may try to hide their disease and may not adhere to dietary and insulin treatment enough (Celik et al., 2015; Zheng & Chen, 2013). Adolescents with Type 1 DM have been shown to feel anxiety, loneliness, mourning and social isolation. This situation makes the adolescents have difficulty in adhering to the required treatment protocols of the disease and has negative effect on metabolic control (Cheraghi,

Shamsaei, Mortazavi, & Moghimbeigi, 2015; Farrant & Watson, 2004).

To have a child with a chronic disease influences whole family and family cycle (Leeman et al., 2016). To get used to the disease and maintain normal family life routines are very important for both the child's and other family members' health. Mother-father harmony is a fundamental point to provide health of other family members (Katz, Laffel, Perrin, & Kuhlthau, 2012; Leeman et al., 2016; Rohan et al., 2015). Type 1 DM has an impact on family members, causing increased burden and worry, high levels of distress, deterioration in family relationships and conflict within familial attitudes and behaviors (Kovacs et al., 2016).

After the diagnosis of Type 1 DM, family and the child may both feel anxiety, fear, guilt, hopelessness and sense of control loss. The family members who feel guilt because of the disease mostly behave in an extreme tolerance, protective manner or denial. These attitudes may negatively affect adherence of children to disease (Kharroubi & Darwish, 2015; Kovacs et al., 2016; Moghanloo et al., 2015).

It is a crucially important point for health professionals to know the problems of adolescent who has been living in acute and chronic conditions of the disease besides the problems of family members. Literature has also shown significant role of a positive relation between nurses giving care to the child and family members of hospitalized child (Watts & Sood, 2016).

Aim

The aim of this study was to determine the possible effect of family life and child rearing attitudes on metabolic control of adolescents with Type 1 DM.

Methods

This descriptive study was conducted relationally to determine the effect of family life and child rearing attitudes on metabolic control of adolescents with Type 1 DM. The universe of the study included adolescents with Type 1 DM in Turkey and their mothers (N=75). Without a sampling, universe was recruited to the study except for those who did not have mother, who have been diagnosed with Type 1 DM earlier than 6 months from the study, who had another chronic disease beyond Type 1 DM and who did not accept to participate in the study (n=14).

Ethical Point of the Study

For the study, ethical approval and official permission were received from the relevant authorities (No: 2009/98). Researchers explained the objectives of the study to participating adolescents and their mothers and obtained oral consent while mothers gave written and signed consent forms.

Data Collections

Three forms were used for data collection. The questionnaire form which was developed through a literature review, Parental Attitude Research Instrument (PARI) and Metabolic Control Measurement Form were used for data collection.

Questionnaire Form: The researchers have developed the questionnaire form included 35 questions about socio-demographic variables of the parents, educations relating Type 1 DM which adolescents and their mothers have taken, adherence to disease and problems of the adolescents.

Parental Attitude Research Instrument (PARI): PARI; measures the child rearing attitudes of mothers and fathers. It was developed by Schafer and Bell (1958) and Le Compte and Özer adapted the instrument to Turkish in 1978. The instrument is composed of 60 items and 5 sub-dimensions (LeCompte, LeCompte, & Özer, 1978). The sub-dimensions of the instrument are: Extremely Protective Motherhood: 1, 3, 4, 7, 11, 12, 14, 26, 27, 28, 32, 34, 36, 46, 51, 57. Democratic Attitude and Recognition of Equality: This sub-dimension includes 9 items 2, 13, 18, 22, 29, 37, 44, 45, 59. Rejecting Housewife Role of the Mother: 6, 9, 16, 17, 21, 23, 31, 38, 41, 42, 49, 52, 55. Husband-Wife Conflict: 8, 19, 33, 40, 48, 54. Strict Discipline: 5, 10, 15, 20, 24, 25, 30, 35, 39, 43, 47, 50, 53, 56, 58, 60. PARI is a 4 likert type scale which has answers in an order from "I don't find any suitable" to "I find it very convenient". The scoring is done by opposite ranking to the 2nd, 29th and 44th items. Every sub-dimension has a separate score in the instrument and a high score of every sub-dimension means the attitude in the relevant sub-dimension is approved. The Cronbach's alpha coefficient of the instrument in the present study was found as 0.87.

Metabolic Control Measurement Form: The researchers have developed the form based on criteria for evaluating metabolic control of the patients with Type 1 DM in Turkey. The form is

composed of 17 questions about attendance to school or work, chronic complications, anthropometric measurements [height, body weight and biochemical findings: fasting blood glucose, HemoglobinA1c (HbA1c), urinary ketone].

Statistical Data Analysis

Data were analyzed in computer with statistic package programs. Descriptive statistics, Pearson correlation and Cronbach's Alpha test were performed in computer with statistic package programs. Kolmogorov-Smirnov test was employed to analyze the missing values in the data of research group and normality of distribution. The statistical significance level was

accepted as $p < 0.05$ in order that variables could be brought into the regression equation.

Participants

Among the participating adolescents, 68.0% were at the age group of 14-17 years, 52.0% were girls and 53.3% were graduates from elementary school while 52.0% of their mothers were at the age group of 35-44 years, 68.0% had graduated from elementary school and 72.0% were housewives. Most of the participating families were nuclear family (65.3%) and 33.4% of them had 3 children. As an indicator of economic status, income and expense were equivalent in 42.6% of the families and income was lower than expense in 10.7%. All of the adolescents had social insurance.

Table 1. Metabolic Control Indicators of the Adolescents (N=75)

| Metabolic Control Indicators | n | % |
|-------------------------------------------------------------|----|------|
| Percentile for Height | | |
| Under 5th percentile | 6 | 8.0 |
| 5th-84th percentile | 57 | 76.0 |
| 85th-95th percentile | 9 | 12 |
| Above 95th percentile | 3 | 4 |
| Percentile for Body Weight | | |
| Under 5th percentile | 10 | 13.4 |
| 5th-84th percentile | 59 | 78.6 |
| 85th-95th percentile | 3 | 4.0 |
| Above 95th percentile | 3 | 4.0 |
| The Last Fasting Blood Glucose Level | | |
| 89 mg/dl and lower | 6 | 8.0 |
| 90-130 mg/dl | 24 | 32.0 |
| 131 mg/dl and higher | 45 | 60.0 |
| HemoglobinA1c | | |
| 8% and lower | 34 | 45.3 |
| Higher than 8% | 41 | 54.7 |
| Due to the Disease Intermediate School Export Status | | |
| Breaking | 46 | 61.3 |
| No breaking | 29 | 38.7 |

Table 2. Attitudes of the Mothers towards Adolescents (N=75)

| Attitudes | n | % |
|---------------|----|------|
| Protective | 18 | 24.0 |
| Supervisory | 10 | 13.4 |
| Authoritative | 7 | 9.3 |
| Tolerant | 33 | 44.0 |
| Democratic | 7 | 9.3 |

Table 3. Correlation between Metabolic Control Indicators of Adolescents and Sub-Dimensions of Parental Attitude Research Instrument

| Sub-Dimensions of Parental Attitude Research Instrument | Metabolic Control Indicators | | |
|---------------------------------------------------------|------------------------------|------------------|-----------------|
| | Fasting Blood Glucose | HemoglobinA1c | Body Mass Index |
| Protective | r=0.212 | r=0.039 | r=0.097 |
| Democratic | r=0.204 | r=-0.242* | r=0.065 |
| Denying Role | r=0.047 | r=0.112 | r=0.082 |
| Husband-Wife Conflict | r=0.255* | r=0.046 | r=0.143 |
| Strict Discipline | r=0.032 | r=0.134 | r=0.107 |

* p<0.05

Results

In the study, 8% and 13.4% of the adolescents had percentiles for height and body weight under 5th percentile, respectively. Most of the adolescents (60.0%) had higher than 131 mg/dl of fasting blood glucose. HbA1c level was higher than 8% in 54.7% of the adolescents. While all of the adolescents regularly attended school, 61.3% had to give a break due to the disease (Table 1). No chronic complications were determined in participating adolescents.

Adolescents defined their mothers as tolerant (44.0%) and protective (24.0%) towards them (Table 2). The Table 3 demonstrates the correlation between metabolic control indicators and sub-dimensions of PARI. There was found a significantly positive correlation between fasting blood glucose levels and husband-wife conflict (p<0.05). In addition, HbA1c levels of the participating adolescents were negatively correlated with democratic attitudes of mothers towards their children (p<0.05). However there was not a significant correlation between sub-

dimensions of PARI and body mass index of adolescents (p>0.05).

Discussion

Traditional Turkish family system requires mothers to be extremely self-sacrificing and children to be polite and submissive. This situation is much more seen in families having a child with chronic disease because being sick is not only a physiologic condition but also is a psychological, social and cultural perception (Çöp, Dinç, & Kultur, 2016; Suris, Michaud, & Viner, 2004). The parents, who have the children with DM, can control the children's metabolic control, by taking care them much more and can be too protective or too tolerant. Keser and his friends stated in convey that had been done with 150 children and 50 healthy children that the mothers of children with chronic disease have much more tolerant attitude, in this convey, majority of adolescents stated that their parents behave protective and tolerant against them (Keser, Kapçı, & Odabaş, 2012). In this study, most of adolescents have stated that their mothers have protective and tolerant attitudes for them

(Table 2). These findings are compatible with the attitude “extreme protection towards sick child” in terms of traditional Turkish family structure and cultural issues.

Control of DM includes controlling and maintaining the metabolic status of adolescent with Type 1 DM which was deteriorated due to the disease (Association, 2016). The last determined fasting blood glucose level of adolescents in the present study was higher than and equal to 131 mg/dl for 60.0% and 54.7% of them had a higher than 8% of HbA1c in terms of indicating metabolic control (Table 1). The level of HbA1c is a significant true in DM, metabolic control on account of whether disease management is good or not. Being the level of HbA1c low indicates that metabolic control and disease management are good (Group, 2015). In a study, mean HbA1c was found as 8.5% in the examined cases, while one third of them had HbA1c level lower than 7.5%, one third had HbA1c between 7.5-9% and the rest one third had higher than 9% of HbA1c level (WHO, 2009). These findings are consistent with research findings, but in our study, the fact that 54.7% of them had a higher than 8% of HbA1c in terms of indicating metabolic control may be result of adolescent’s mothers have too protective and too tolerant attitudes for them.

DM influences the whole life of adolescent. The problems experienced in treatment and management of disease (frequent polyclinic control, hospitalization, complications) can influence negatively the adolescent’s social and school life, school and friendship relations, academic success and attendance of school (Sawyer et al., 2004). Chien et al. in survey had been done with type 1 DM adolescents determined that 21.1% of adolescents had to give up school for one or more term (Chien, Larson, Nakamura, & Lin, 2007). In this convey, 61.3% of adolescents stated that they had break school because of disease (Table 1).

Because peer is important in adolescent term, living style and changes in routines can be problematic (Moghanloo et al., 2015). This situation can be seen in incapability with keep up with diet programs (Wisting et al., 2015). Additionally, adolescents can be smaller than their peers because of changes of external appearance, growth and delay of puberty (Pillitteri, 2010). In our study, the height percentiles of 8% and and body weight of 13.4%

of adolescent with Type 1 DM is under 5 percentile (Table 1). This situation can be cause of adolescent’s feel himself different from other peers and several psychological problems. For adolescent with Type 1 DM, the reason for not achieving metabolic control criteria may be derived from the influence of several factors such as adolescent’s problem solving ability, self-control, family life and behavior of growing up children. Because of this, attendance of adolescent and his family is need to at highest level to Type 1 DM care (Lewandowski & Drotar, 2007; Streisand et al., 2008). In conveys had been done in abroad, it is stated that the behavior of parents has a significant role at glycemic control of adolescent and children with DM (Anderson, 2004; Shorer et al., 2011; Tsiouli, Alexopoulos, Stefanaki, Darviri, & Chrousos, 2013). It is pointed out that, in the survey that Shorer and et al. conduct with Type 1 DM adolescents and their parents, the glycemic results of the children is good whose parents say that they behave democratically, but the glycemic controls of the children whose parents are dominant or allow easily are bad and there is a positive relationship between HbA1c level and parents behaviour (Shorer et al., 2011). In this convey, the levels of HbA1c of children whose mothers have more democratic attitude can be seen lower than in comparison with the other families ($p < 0.05$) (Table 3). Naturally, it can be said that mothers of adolescents having good metabolic control have more democratic attitude and make a point of their child’s individuality. Democratic behavior and individuality complimented adolescent’s self-confidence can increase, adolescent can take an effective part in disease management and his metabolic control can be good.

Having a child with chronic disease in family is a stressful status for all member of family (Çöp et al., 2016; Suris et al., 2004). Marshall et al. stated that the members of adolescents with DM have communication problems (Marshall, Carter, Rose & Brotherton, 2009). In the study, there was found a significantly positive correlation between fasting blood glucose levels and husband-wife conflict ($p < 0.05$) (Table 3). Family members’ accordance to chronic disease affect positively the adolescent’s accordance and metabolic control (Abdelhameed & Ali, 2016; Leeman et al., 2016; Perantie et al., 2008). In a study, it was determined that a better metabolic control could be obtained by a family focused care and an

active family interview including the revision of responsibility sharing plan after every visit which also result in an increased participation of family members in the process (Katz et al., 2012). Shared responsibility plan contributes to mental, physical and psychosocial maturation of the adolescent with Type 1 DM (Abdelhameed & Ali, 2016; Rohan et al., 2015).

Conclusions

It is found that adolescents' mothers are tolerant and protective towards them. Family life and child rearing attitudes found to have impact on fasting blood glucose and HbA1c levels but not on and body mass index in adolescents with Type 1 Diabetes Mellitus. In lights of these results, it is recommended that families be trained about family life and child rearing.

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