

Effect of an Intervention Program on Parenting Styles, Self Efficacy and Adherence among Diabetic Adolescents in Farwanya Governorate, Kuwait

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Abstract: Diabetes is a source of stress for patients of all ages, but particularly during adolescence. The transition into adolescence is frequently marked by declines in adherence and metabolic control due to decreased parental responsibility for diabetes care. Many factors affect parents' ability to deliver diabetic care including: knowledge, parental self-efficacy and parental style. The aim of the study was to find the correlation of parenting style, parents' self-efficacy and adherence with glucose level among early adolescents with type I diabetes through an interview questionnaire and the impact of an intervention program on those determinants. Results showed that 40.5% of parents had authoritative style, 39.7% had authoritarian style and 19.8% had permissive style. There was a positive correlation of adherence and metabolic control with knowledge, self-efficacy and authoritative behaviors of parents. Following the intervention, there was improvement in knowledge, self-efficacy, authoritative behaviors and adherence and no significant effect on metabolic control.

Key words: Early Adolescents, Diabetics, Parenting Style, Self-Efficacy, Adherence, Metabolic Control, Education Intervention.

INTRODUCTION

According to WHO, Kuwait is one of five countries with highest rate of diabetes. Type 1 diabetes is a common chronic disease in Kuwaiti children and adolescents with a prevalence rate of 269.9 per 100,000.⁽¹⁾ Diabetes is a source of stress for patients of all ages, but particularly so during adolescence. For children with diabetes, the transition into adolescence is frequently marked by declines in adherence, in metabolic control, and in

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psychosocial well-being.⁽²⁾ A key factor in understanding poor diabetes management during this developmental transition is that adolescents begin to assume primary responsibility for managing their diabetes, and the important role parents had previously played in maintaining the medical regimen is altered.⁽³⁾ Decreased parental responsibility for diabetes care that occurs during adolescence is associated with poorer adherence and poorer metabolic control.⁽⁴⁾ However, it seems likely that with respect to parent involvement in diabetes management tasks, the important question is not “how much involvement?,” but rather, “how is this involvement communicated?”⁽⁵⁾ Evidence suggested that negative and unsupportive parental behavior patterns related to diabetes care behaviors (e.g., coercion, nagging, threats, criticism, and scolding) are correlated with both poorer metabolic control and poorer regimen adherence.⁽⁶⁾

Many factors affect parents' ability to deliver diabetic care including: knowledge⁽⁷⁾ parental self-efficacy⁽⁸⁾ and parental style.⁽²⁾ Parental self efficacy is the extent to which the parents believe themselves capable of managing their child's condition effectively.⁽⁸⁾ Parenting style is defined as several specific behaviors intended to influence, teach, and control a child's behavior.⁽⁹⁾ There are three different typologies of parenting style: permissive, authoritarian, and authoritative. Authoritative parents are not intrusive and allow the child considerable freedom within reasonable limits, and yet these parents will impose restrictions in areas in which they have greater knowledge or insight. The authoritarian parenting style is marked by high control with the frequent use of power; parents are less warm and do not encourage the child to express himself when parent and child disagree. The permissive parenting style as one in which parents use control infrequently, make

almost no demands for mature behavior from their children, and yet are relatively warm. Permissive parents had the least competent children.⁽¹⁰⁾

The aim of this study is to find the correlation between parental style, parents' self-efficacy, adherence and glucose level among early adolescents with type I diabetes, and to evaluate the impact of a health education program on the previous parental factors and adolescents' metabolic control.

Subjects and Methods

Setting

The study was conducted in diabetic clinics in two family centers chosen at random from Farwaniya governorate, Kuwait.

Sample

The study used a cross sectional pre-post test design. The target population was the parents of early adolescents (11-15 years old) diagnosed with type I diabetes that understand and speak Arabic

language. A total of 123 parents were willing to participate in the study with a response rate of 23.4% among Kuwaiti and 39.2% among non Kuwaiti.

Methods: An interview questionnaire was used to collect the data from the parents. It consisted of five parts.

First part: Sociodemographic factors of adolescents and parents; adolescent' sex, age and number of siblings. For parent: sex, education and marital status.

Second part: Michigan Diabetes Research and Training Center's Brief Diabetes Knowledge Test⁽¹¹⁾ after modification. It consists of 16 multiple choice items, the responses were scored so as right answer was scored "1" and wrong answer "0" with a total score of "16".

Third part: Self-care inventory-parent version (after modification).⁽¹²⁾ It Consists of 12 items on 5 likert scale (from never adhere "0"to always adhere"4") with a maximum score of 48.

Fourth part: parent self-efficacy for

diabetes scale.⁽¹³⁾ It consists of 18 items rated on a five-point scale ranging from 1 (“very sure I can’t”) to 5 (“very sure I can”) with total maximum score of 90.

Fifth part: parenting style questionnaire.⁽¹⁴⁾The questionnaire consists of three sections rating how often the parent engage in the different parenting practices (authoritative, authoritarian and permissive). Scores range from “Never” to “Always” on a 5-point scale. The highest score in the three categories indicates the parent preferred style.

The metabolic status: this was estimated using HbA1c performed in the last three months from the family centre records.

Intervention phase:

After completing the analysis of the descriptive phase of the study and review of literature,^(15,16) parents having self-efficacy less than 50% of the total score (<45) and adherence less than 50% of the total score (<24) and with HbA1c > 10.0% were invited to join a health education

program aiming to raise parent self-efficacy and their authoritative behaviors. Forty parents fulfilled the previous criteria. A total of 23 parents divided into two groups (one in each family centre) completed the four sessions with a response rate of 57.5%.

Strategies: The program consisted of four sessions (once every month). Each session lasts for one hour in the form of group discussion and role play conducted by the researchers. **Content:** The program focused on enhancing self-efficacy using problem solving techniques, how to plan realistic goals and training parents and how to deal with disease-specific situations using authoritative behaviors. **Evaluation:** The program was evaluated three months following the intervention using the same questionnaire and determining HbA1c from records.

Statistical Analysis:

Data entry and analysis was done using SPSS version 19. Bivariate correlation, independent sample t-test and one way

ANOVA were used in the descriptive phase of the study while paired-sample t-test was used to compare the results before and after the intervention. A P value was statistically significant at level 0.05%.

RESULTS

Table 1 shows the sociodemographic and diabetes-related characteristics of adolescents. About one half (51.6%) of adolescents were females and (47.6%) were Kuwaiti. The mean age was 13.19 ± 1.78 and mean duration of diabetes was 5.31 ± 1.26 . The mean HbA1c among the sample was 9.62 ± 1.43 .

Table 2 represents the sociodemographic and diabetes characteristics of parents. mothers represented 81.0% of the sample. About two thirds of parents (67.5%) had secondary or diploma graduation and the majority of them were married (90.5%).

The mean of total knowledge was 11.99 ± 2.17 , the mean of total adherence was 29.65 ± 6.02 and that of self-efficacy was 59.54 ± 9.88 . Regarding parenting

style, there was nearly equal distribution between authoritative and authoritarian styles (40.5% and 39.7%, respectively) while permissive style constituted only of 19.8% of the sample. The mean of authoritative behaviors was 43.62 ± 8.94 , mean of authoritarian behaviors was 38.60 ± 8.20 while the mean of permissive behaviors was (11.71 ± 2.85)

Table 3 displays the correlation matrix of parents' knowledge, self-efficacy, adherence, parenting styles, some demographic and disease characteristics of adolescents. Knowledge had a positive correlation with duration of disease and negative correlation with number of siblings. Regarding self-efficacy, it was positively correlated with both duration of disease and parent knowledge while it was negatively correlated with number of siblings. There was a positive correlation of adherence with both knowledge and self-efficacy of parents while the correlation of adherence with number of siblings was

negative. Concerning authoritative behaviors of parents, it was positively correlated with knowledge, self-efficacy and adherence and it was negatively correlated with number of siblings. On the other hand, authoritarian behaviors were positively correlated with number of siblings and age of child and had a negative correlation with adherence and authoritative behaviors of parents. The permissive behaviors of parents were negatively correlated with both adherence and authoritarian behaviors of parents. There was a negative correlation between level of HbA1c and knowledge, self-efficacy, adherence and authoritative behaviors of parents while HbA1c level was positively correlated to number of siblings.

Regarding parent characteristics, there was a significant relation between knowledge, self-efficacy, adherence and parent education ($F=8.049$, 5.154 and 4.894 respectively) while there was no

significant relation between those factors and parent gender or nationality. Married parents scored significantly higher than divorced parents regarding knowledge ($F=4.447$) and self-efficacy ($F=3.006$). Concerning parenting styles, fathers tended to be significantly more authoritative than mothers (60.9% versus 36.6%) ($p<0.05$).

Figure 1 shows the mean parenting behaviors before and after the intervention: Parents scored significantly higher in authoritative behaviors ($p<0.01$) and lower in permissive behaviors ($p<0.01$), while there was no significant change regarding authoritarian behaviors.

Table 4 shows the mean knowledge, self-efficacy, adherence and glucose level before and after the intervention.

The table shows that there was a significant improvement in knowledge ($p<0.01$), total self-efficacy ($p<0.01$), self-efficacy about medication ($p<0.01$), self-efficacy about check up ($p<0.05$), total adherence ($p<0.01$),

adherence to check up ($p<0.01$), and was not significant before and after the adherence to exercise ($p<0.01$). Although intervention.

there was a decrease in HbA1c, the difference

Table 1: Sociodemographic and diabetes-related characteristics of adolescents

Characteristic	Adolescent (n=126) [No. (%) / mean±S.D]
Gender	
Male	61 (48.4%)
Female	65 (51.6%)
Nationality	
Kuwaiti	60 (47.6%)
Non-Kuwaiti	66 (52.4%)
Siblings	2.76±1.49
Age	13.19±1.78
Duration of disease	5.31±1.26
HbA1c	9.62±1.43

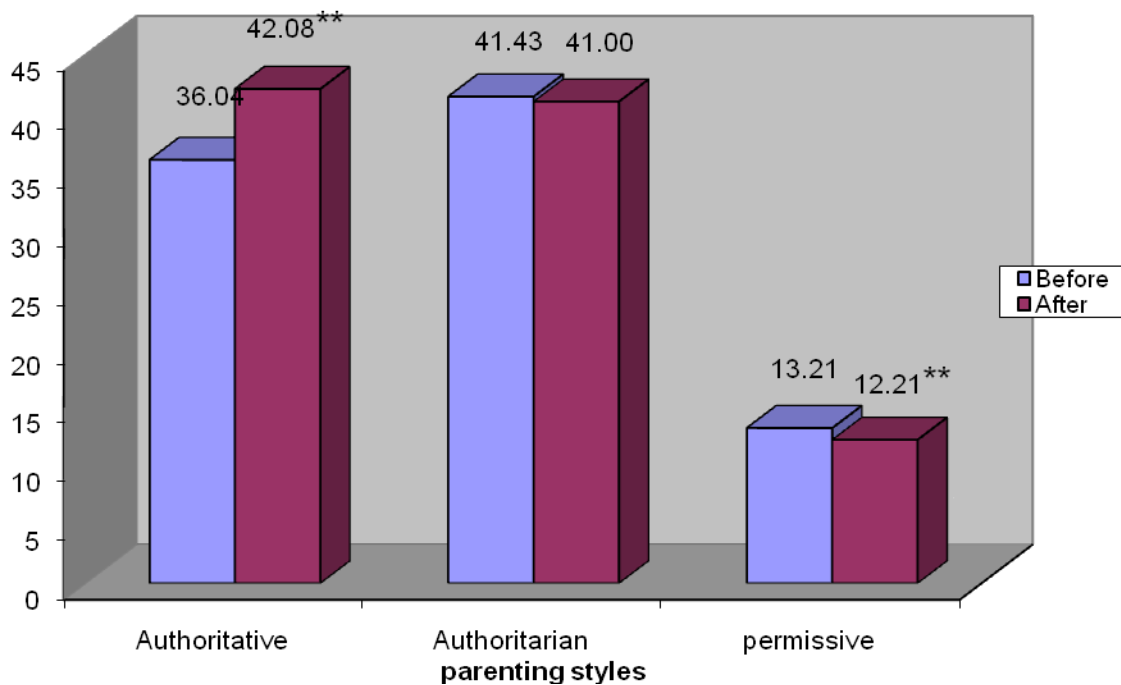
Table 2: Sociodemographic and diabetes related characteristics of parents

Characteristics	Parent (n=126) [No. (%) / mean±S.D]
Gender	
Mother	102 (81.0%)
Father	24 (19.0%)
Education	
Primary/preparatory	16 (12.7%)
Secondary/diploma	85 (67.5%)
College degree or higher	25 (19.8%)
Marital status	
Married	114 (90.5%)
Divorced	12 (9.5%)
Parenting styles	
Authoritative	51(40.5%)
Authoritarian	50 (39.7%)
Permissive	25 (19.8%)
Knowledge	11.99±2.17
Adherence	29.65±6.02
Self-efficacy	59.54±9.88
Authoritative behaviors	43.62±8.94
Authoritarian behaviors	38.60±8.20
Permissive behaviors	11.71±2.85

Table 3: Correlation matrix of parents' knowledge, self-efficacy, adherence, parenting styles and some demographic and disease characteristics of adolescents.

	knowledge	Self-efficacy	Adherence	authoritative	authoritarian	permissive	HbA1c
Age(year)	0.163	0.070	-0.102	-0.109	0.223**	-0.031	0.049
Sex of child	-0.077	-0.020	-0.119	-0.039	0.066	-0.025	0.064
Duration (year)	0.450**	0.261**	-0.030	-0.006	0.157	-0.174	0.004
siblings	-0.248**	-0.235**	-0.408**	-0.471**	0.263**	0.042	0.401**
knowledge	-	0.570**	0.466**	0.333**	-0.025	-0.171	-0.340**
Self-efficacy		-	0.631**	0.479**	0.054	-0.162	-0.468**
Adherence			-	0.585**	-0.242**	-0.210**	-0.663**
Authoritative				-	-0.327**	0.163	-0.400**
Authoritarian					-	-0.485**	0.123
Permissive						-	0.022
HbA1c							-

**P<0.05



**P<0.05

Figure I: Parenting behaviors before and after intervention.

Table 4: Mean knowledge, self-efficacy, adherence and glucose level before and after intervention.

	Pre-intervention	Post intervention	t value
knowledge	9.91±2.04	11.78±1.47	-5.79**
Total Self-efficacy	48.52±6.35	60.08±8.43	-7.425**
Self-efficacy about medication	12.43±2.39	16.96±6.14	-3.53**
Self-efficacy about diet	13.78±3.08	14.06±2.81	-0.42
Self-efficacy about check up	11.12±4.60	13.25±4.17	-2.45**
Self-efficacy about emergencies	10.33±5.31	14.16±6.83	-2.68**
Self-efficacy about exercise	0.86±0.34	1.65±3.41	-1.11
Total adherence	20.39±2.72	27.91±4.59	-7.465**
Adherence to medication	8.92±0.78	10.03±5.92	-0.899
Adherence to diet	5.64±3.18	7.74±6.09	-1.654
Adherence to check up	5.11±1.26	8.17±2.63	-5.48**
Adherence to exercise	0.72±2.08	1.97±0.10	-59.94**
HbA1c	11.23±0.99	10.97±0.66	1.54

**P<0.05

DISCUSSION

Empirical studies have shown that young adolescents who have more parental involvement and monitoring tend to achieve and maintain better diabetes outcomes.⁽³⁾ Theoretical perspectives on parenting indicate that parents influence their children's behavior by creating an emotional climate characterized by parental support and clear establishment of boundaries.⁽¹⁷⁾ This socialization would be expected to extend to the management of a chronic illness such as diabetes, in which disease management impacts most or all dimensions of the child's life.⁽¹⁸⁾

The sample had a mean HbA1c of 9.62±1.43 which is 2.26% higher than the ADA's current recommendation for children, adolescents with diabetes.⁽¹⁹⁾ Regarding parenting styles, there was nearly equal distribution between authoritative and authoritarian styles. In contrary, a study conducted in USA reported that parents tended to be more authoritative in their approaches to parenting than either authoritarian or permissive. The present sample had higher authoritarian and permissive behaviors than the study of USA (mean of 38.60

versus 22.1 and 11.71 versus 7.24 respectively) while they had lower authoritative behaviors (43.62 versus 50.44).⁽²⁰⁾ Fathers were more authoritative than mothers because fathers of chronically ill children often see their wives as having the major responsibility and as expert caregivers, fathers may defer much of the parenting and supervision of disease management to their wives.^(21,22)

The results demonstrated that there was a significant relation between self-efficacy and both adherence and metabolic control. This is concurrent with many previous studies exploring the effect of self-efficacy on adherence and metabolic control. Parents' perceptions of their ability to complete necessary diabetes regimen tasks predict good adherence and metabolic control among adolescents.^(23,24)

The pathway from higher diabetes self-efficacy to greater adherence and lower HbA1c is consistent with daily diary work linking daily self-efficacy to adherence and

blood glucose control.⁽²⁵⁾ Furthermore, this pathway is consistent with the social-cognitive theory underlying self-efficacy, where confidence in one's ability to complete diabetes-management tasks in the face of difficulties should be evident in behavioral aspects of diabetes management.^(26,27)

There was a significant positive relation between authoritative behaviors of parents and both adherence and metabolic control while there was a significant negative relation between authoritarian and permissive behaviors with adherence. There was no significant relation between metabolic control and authoritarian or permissive behaviors. These findings are consistent with the study of Greene et al (2010) where authoritative mothering was the main predictor of A1C and diabetes management while higher ratings on permissive and authoritarian mothering were significantly correlated with poorer adherence.⁽²⁰⁾ Authoritative parents may

engage in behaviors that promote self-care and metabolic control through different mechanisms such as: giving regular positive feedback, providing rewards to promote compliance, and planning self-care activities with the child.⁽²⁸⁾ Also, Greater parental warmth may improve adherence through a reduction in family conflict, an increase in cohesion, or both. Another possible mechanism for the effect of parental warmth on adherence is through the child's development of self-control.⁽²⁹⁾ Parental warmth was linked with greater self-esteem and internal locus of control. Learned helplessness has been linked with worse glycemic control and self-efficacy with better glycemic control in adolescents with diabetes.^(5,20,30) Faulkner and Chang (2007) suggested that positive communication and emotional support (as in authoritative parenting) were raising children/adolescents with diabetes who had higher levels of self-care participation.⁽³¹⁾ Similar to the findings of

the current study, previous research found a significant relation between permissive behaviors of mothers and poor diabetes management in adolescents and this was explained by the lower levels of demandingness found in permissive parenting. This lack of demandingness may lead to amotivation.⁽³²⁾ Authoritarian mothering was also related to poorer compliance because of its controlling and demanding nature. Demanding parenting could backfire and instead of pushing to work harder may dampen motivation and result in amotivation and possibly poor compliance to a prescribed diet.⁽²⁰⁾

In concordance with the present study, a study exploring maternal parenting styles found no significant relationship between both authoritarian or permissive parenting and metabolic control.⁽²⁷⁾ On the other hand, Davis et al (2001) reported in his study that parental restrictiveness (similar to excessive firm control) were associated with poorer glycemic control, perhaps

suggesting that parents exert more firm control when management is not going well.^(33,34) A restrictive parenting style (authoritarian style) may be a response to behavioral problems, a threatening environment, or other stressors on the family system. Strictness may also be a source of stress for the child. Thus, an association between restrictiveness and glycemic control could reflect an array of relationships between psychosocial stress and glycemic control.⁽³⁵⁾ This model posits that lack of diabetes-specific support behaviors and attitudes increases parent-child conflict, that in turn decreases children's willingness to comply with their prescribed regimen and decreases the parents' ability to monitor their child's adherence to regimen. Overall, children who reported more negative and critical relationships with their parents were in worse metabolic control.⁽⁶⁾

The current study demonstrated a significant relation between self-efficacy

and authoritative behaviors of parents. In agreement with these results, other studies found that parental self-efficacy significantly predicted an authoritative parenting style and an authoritarian parenting style. The quality of young adolescents' relationships with mothers and with fathers had associations with adherence and HbA1c through lowering externalizing behaviors and bolstering self-efficacy.⁽³⁶⁾ In addition, self-efficacy was an important benefit associated with a high quality parent-adolescent relationship.⁽³⁷⁾

Regarding the intervention phase of the study, there was a significant improvement of knowledge, self-efficacy about medication, checks up and dealing with emergencies but it had no effect on self-efficacy about diet or exercise. Parents scored higher in authoritative behaviors and lower in permissive behaviors following the intervention but there was no change in their authoritarian behaviors. These improvements were accompanied by

amelioration in adherence to check up and exercises. In agreement with these results, many studies using family interventions reported that the increase in knowledge in conjunction with self-efficacy improved self-care behaviors related to diabetes, such as exercise and blood sugar monitoring while diet change was more difficult to change.^(38,39,40)

Supporting the findings of several previous researches.^(5,8,41) encouraging authoritative parenting, characterized by support and affection, using inductive rather than coercive control techniques was accompanied by improvement in adherence which may have lasting effects that could ameliorate the expected worsening of adherence during adolescence and potentially avert or delay the development of complications. It is to be noted that the intervention significantly affected the permissive behaviors of parents while it had no effect on authoritarian behavior, which may be due

to the stress the parents encountered when dealing with a diabetic child and the conflict that raised during the transition from childhood to adolescence.⁽⁴¹⁾

Regarding the level of HbA1c, there was no significant change following the intervention which is consistent with other studies using personal and family intervention that didn't find a relation between adherence and glycemic control and this was explained by hormonal changes accompanying adolescence.⁽⁴¹⁾

CONCLUSION AND RECOMMENDATIONS

In conclusion, parental style, self-efficacy and knowledge had a significant relation to contribution of parents in diabetes management. Also, authoritative parenting helps parents to overcome conflict arising from diabetes management. We recommend that parent training on authoritative behaviors and resolution of conflicts must be a part of any family intervention for diabetic children and adolescents to improve adherence and metabolic control.

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