Factors Associated with Depression and Resilience in Children with IDDM

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= Abstract =

Purpose: The main objectives of this study were to examine relationship between depression and resilience in children with IDDM and identify factors associated with depression. **Method:** Data were collected from 63 children whose ages ranged from 10 to 15 years and who had been diagnosed with IDDM for over six months. Resilience was measured with an instrument developed by Kim (2002) and depression with the CDI by Beck (1967). Descriptive analysis, Pearson correlation coefficients and multiple regression analyses were used to analyze the data. **Results:** The mean score for depression was 11.71 (range: 0-54) and resilience was 99.03 (range: 32-128). There was a significant positive relationship between depression and academic performance (r=0.598, p<.01), and negative relationships between depression and perceived parenting attitude (r=-0.579, p<.01) and resilience (r=-0.577, p<.01). The result of multiple regression analysis showed that academic performance (β=-0.419, p<.01), perceived parenting attitude (β=-0.338, p<.01) and resilience (β=-0.219, p<.05) were statistically significant for depression. **Conclusions:** The children with IDDM who reported lower resilience, negative parenting attitude, and better academic performance were more depressed. It is important for nurses to identify the strengths of the children with chronic illnesses and to help them increase their resilience level to prevent depression. Parenting classes are necessary to help parents support resilience of their children and counseling programs for mothers of these children are also recommended.

Key words : Depression, Resilience, Children with IDDM

INTRODUCTION

Childhood Type 1 diabetes mellitus (DM) is a serious chronic disease which may cause severe medical problems. Diabetes has an enormous impact on the life of the child and family because it involves testing blood sugars several times a day, multiple daily injections of insulin, and counting the carbohydrate content in all foods. To control the symptoms of DM and to promote healthy growth and development, diabetic children require not only interventions focused on symptom control, but psychological and emotional interventions as well (Ciechanowski, Katon, Russo, & Hirsch, 2003; Surwit, Schneider, & Feinglos, 1992).

There are other studies reporting negative aspects of DM on

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these children. Diabetic Children require life-long treatment, which places a tremendous burden on them and their families. In addition, they have to cope with worry and stress related to complications and physical side effects, not to mention other emotional struggles (Kwon, 2002; Llyod, Wing, Orchard, & Becker, 1993). Diabetic children are known to have problems of developing social relationships and good interpersonal skills (Lloyd et al., 1993; Kim D. H., 1997). Diabetic children have guilty feeling over their excess reliance on their parents about symptom management. Parents of diabetic children may try to control or overprotect their children, causing the conflict between parent and child regarding self-reliance and independence of children.

Guttmann-Baumann and coworkers (1998) reported a high prevalence of depression among diabetic children. Diabetic children experience depression because of physical obstacles in their daily activities and, this depression in turn exacerbates their diabetic symptoms (Ciechanowski et al., 2003; Lemmark, Persson, Fisher, & Rydelius, 1999).

Several studies identified factors associated with depression in chronically ill children. Cho and Kim (2003) reported gender, age, and economic status of the family as factors associated with depression in chronically ill children. Choi, and coworkers (2000) stated that low self-esteem and depression among chronically ill children were closely related to poor academic performance. Other studies suggested a significant relationship between parenting attitude and children's adaptive capabilities (Park, 1996; Soliday, Kool & Lande, 2001). They reported that children with affectionate and permissive parents show better adaptive capabilities.

However, research findings concerning depression among diabetic children are not consistent. Bennett (1994) reported no significant increase in depression among diabetic children when compared with healthy children. A chronic illness during childhood could be a significant risk factor affecting healthy growth and development. But, there are many children with chronic illness who have managed the stresses and problems associated with their illness and have shown positive psychosocial growth and development (Patterson & Blum, 1996; Woodgate, 1999).

The concept of resilience came from the paradigm that individuals could overcome difficulties and adapt better by utilizing inner strengths and abilities that they already have (Luthar & Zigler, 1991; Masten, Best, & Garmezy, 1990).

Recent studies on adaptation put emphasis on identifying the strengths and abilities rather than on the adverse effects of illnesses on children (Park, 2000, Patterson & Blum, 1996). By using this resilience paradigm, focus is on the strengths of individuals, and most important approach is to assist them to solve problems by utilizing their own strengths and resources. Kim (2002) reported that the concept of resilience includes interpersonal, coping, and intrapersonal components. The interpersonal component includes characteristics such as positive self-concept, confidence, and optimism. The coping component includes assertiveness, endurance, kindness, resourcefulness, autonomy, responsibility and flexibility. The intrapersonal component includes intimacy, sensitivity, tactful social skills, and cooperation. The concept of resilience can be employed to explain the level of adjustment in children with chronic illness. Patterson and Blum(1996) suggested that emotional status such as depression is an outcome of chronic illness in children and attempted to explain depression as the results of family resilience and functioning of chronically ill children. However, Patterson measured children's depression using the mothers' reports, not the children's reports. Thus, it is necessary to collect data from chronically ill children themselves to develop better interventions to promote resilience and to reduce depression of these children.

The purpose of this study was 1) to identify factors associated with resilience and depression in children with IDDM, and 2) to explain the relationship between resilience and depression among children with IDDM.

METHODS

Sample and Setting

The participants were selected from a pediatric DM clinic at one university affiliated medical center located in metropolitan Seoul area. The inclusion criteria for participation were children aged between 10 and 15, 1) who had been diagnosed with DM for longer than six months, 2) who were being treated at the time of this study, 3) who were able to understand and fill out the questionnaire, and 4) who agreed to participate in the study. The reason for selecting 10-15 years old children is that they are at late concrete operations and formal operations periods of Piaget's cognitive development theory. The children in these developmental periods can

evaluate themselves and their environments using logical and abstract idea (Lee, Shin, & Song, 1992). A total of 68 children were included in the study.

Data Collection Procedure

Upon receiving permission for data collection from the Medical Center, convenience sampling was done by contacting the children in the outpatient DM clinic. Data were collected from July 13, 2004 to September 10, 2004, as it was during summer break and many school age children visited the clinic for follow-up care. Self-reporting is better for reflection of children's subjective experience (Buri, 1991; Rende & Plomin, 1991), so data on parenting attitude, resilience, depression were collected directly from the children. The purpose of the study and assurance of confidentiality was given to all of the children and their parents. The self-reported survey questionnaire was given to the children to fill out while they were waiting to be examined by the physician.

The participants in the study were given a small token of appreciation. Also, an individual counseling session was provided for them on school activities, peer relationship, medications, and management of DM by the researcher. A total of 68 questionnaires were obtained and final analysis was done with 63 questionnaires as 5 questionnaires had missing items.

Research Instruments

● Demographic characteristics
Demographic variables included child's age, gender, religion, and duration of illness. Parent's characteristics included parents' age, marital status, education level of both parents, and family structure. Self evaluation of academic performance was included but economic status of family was deleted because many children had difficulty answering the question during the preliminary study. The information on duration of illness was obtained from the medical records because many children could not give correct answers.

● Perceived parenting attitude
The questionnaire developed by Kwak (1994) which was

based on the Schaefer's MBRI(Maternal Behavior Research Instrument) was used. The questionnaire contained 24 items featuring two dimensions of parenting attitude - "affection and hostility" and "permissive and control" -12 items on each dimension. All items were measured on a 4-point scale. The score distribution ranged from 12 to 48. Higher scores indicate more positive child-rearing attitudes. The Cronbach's α score for this study was .86.

● Resilience
Resilience was measured with the instrument developed by Kim (2002). The instrument has 32 questions on a 4 point scale. The instrument has 3 components; an intrapersonal, coping, and interpersonal component. The scores range from a minimum of 32 points to a maximum of 128. Higher scores indicate higher resilience in the children. The Cronbach's α score was .92 at the time of development of the instrument. The Cronbach's α score for this study was .88.

● Depression
Depression was measured with a translated version of the Kovacs' (1985) Child Depression Inventory (CDI) for children 8 to 13 years of age. The CDI has 27 questions. It was designed to measure the mood status using a self-report method. Each question contains 3 descriptive statements and the child is to evaluate each statement from 0 to 2 according to his/her mood. Higher scores indicate more depression. The Cronbach's α score for this study was .83.

Data Analyses

SPSS WIN version 12.0 was employed for the following statistical analyses:
· Percentages, and means and standard deviations were used to describe general characteristics of the children.
· Means and standard deviations were calculated for the analysis of resilience and depression in children.
· Pearson correlation coefficients were computed to determine the relationship between general characteristics and resilience and depression.
· Multiple-regression analysis was done to identify variables related to depression in children.

<Table 1> Demographic and general characteristics of participants   (n=63)

Variable	Categories	N(%)	Mean±SD	Range
Sex	Male	28(44.4%)		
	Female	35(55.6%)		
Age of child(yrs)			12.00±1.64	10-15
Age of father(yrs)			43.79±3.58	37-57
Age of mother(yrs)			40.94±3.08	35-49
Marital status	Married	62(98.4%)		
	Not married	1(1.6%)		
Father's education level	Middle school or less	1(1.6%)		
	Highschool	24(38.1%)		
	College or more	38(60.3%)		
Mother's education level	Middle school or less	2(3.2%)		
	Highschool	24(38.1%)		
	College or more	37(58.7%)		
Family structure	Extended	9(14.3%)		
	Nuclear	54(85.7%)		
Religion of child	Have	44(69.8%)		
	Have not	19(30.2%)		
Academic performance	High	21(33.3%)		
	Middle	33(52.4%)		
	Low	9(14.3%)		
Duration of illness(yrs)			4.29±3.05	0.6-11.8

RESULTS

Demographic Characteristics of Participants

An average age of children was 12.00 years. There were 28 boys and 35 girls. The average age of the fathers was 43.79 years and mothers, 40.94 years and except one child's parent, they were all married. Fifty-two (66.6%) fathers were college graduates and 42 (50.8%) mothers were high school graduates. The majority was nuclear family households. Forty-four children were affiliated with some religion. Twenty-one (33.3%) children reported their academic performance belonged to the top third of their class and 33 (52.4%) were the middle level. The duration of illness ranged from one year to nine years with a mean of 4.29 years <Table 1>.

Depression and Resilience Scores of Participants

The depression scores of the children were between 0 and 34 (possible range: 0-54), with an average of 11.71 and the

<Table 2> Depression and resilience score   (n=63)

Variable	Mean	SD	Range
Resilience	99.03	12.88	70-125
Depression	11.71	7.37	0- 34

resilience scores were between 70 and 125 (possible range: 32-128), with an average of 99.03 <Table 2>.

Variables Related to Depression and Resilience

Age, gender, religion and duration of illness did not show a statistically significant relationship with either depression nor resilience. But the relationship between depression and academic performance (r=0.598, p<.01) and perceived parenting attitude (r=-0.579, p<.01) were statistically significant. The children who had DM for a longer period of time showed higher levels of depression, but it was not significant.

Resilience was positively related to perceived parenting attitude (r=0.575, p<.01) and academic performance (r=-0.391, p<.05). Children with affectionate and permissive parents showed higher resilience scores. Children with higher academic performance showed lower resilience.

There was a statistically significant inverse relationship (r=-0.577, p<.01) between resilience and depression. Children with higher scores on the resilience reported lower depression as expected. The sub-concepts of resilience – interpersonal component (r= -0.497, p<.01), coping component (r=-0.494 p<.01), intrapersonal component (r=-0.490, p<.01) – were also significantly negatively related with depression <Table 3>.

<Table 3> Correlation among the variables   (n=63)

Variable	Age	Duration of illness	Academic performan-ce	Mother's age	Mother's education	Perceived parenting attitude	Resilience	Inter-personal C	C of coping	Intra-personal C	Depre-ssion
Age	1.000										
Duration of illness	0.010	1.000									
Academic performance	0.295*	0.186	1.000								
Mother's age	0.260*	-0.102	0.260*	1.000							
Mother's education	-0.322*	-0.060	-0.280*	-0.172	1.000						
Perceived parenting attitude	-0.055	-0.123	-0.276*	-0.054	0.045	1.000					
Resilience	-0.125	0.062	-0.391*	0.089	0.041	0.575**	1.000				
Interpersonal C	-0.065	0.036	-0.444*	0.090	0.018	0.456**	0.865**	1.000			
C of coping	-0.065	0.086	-0.330*	0.109	-0.034	0.520**	0.909**	0.704**	1.000		
Intrapersonal C	-0.314*	0.023	-0.223	0.012	0.058	0.489**	0.767**	0.511**	0.528**	1.000	
Depression	0.168	0.011	0.598**	0.036	-0.125	-0.579**	-0.577**	-0.497**	-0.494**	-0.490**	1.000

C: component   *$p<.05$ **$p<.01$

Variables Associated with Depression

Multiple regression analysis was done to identify variables associated with depression. The variables included in the regression model were duration of illness, academic performance, perceived parenting attitude, and resilience. The significant variables associated with depression were resilience ($p<.05$), perceived parenting attitude ($p<.01$) and academic performance ($p<.000$). Variables in the regression model explained 31% of depression <Table 4>.

<Table 4> Factors associated to depression   (n=63)

Variable	β	P
Academic performance	0.419	0.000**
Perceived parental attitude	-0.338	0.002**
Resilience	-0.219	0.049*
$R^2=0.33$ Adj $R^2=0.31$		

*$p<.05$ **$p<.01$

DISCUSSION

The average score for child depression in this study, 11.71, was almost same as Lee and coworkers (1998) which reported 11.69 for healthy Korean school age children using the same instrument. However, our score was lower than those of other studies with healthy Korean children. Cho and Lee (2003) reported 14.72, and Park, Choi, and Lee (1995) reported 13.80. These results suggest that one needs to be careful when generalizing depression rate among chronically ill children (Shemesh, Bartell, & Newcorn, 2002; Stein, Westbrook &

Silver, 1998). It is possible that other influencing factors such as parenting attitude has a greater impact on children's depression than chronic illness itself.

Many studies reported gender, age, religion, and duration of illness were important factors associated with depression of chronically ill children. In this study, according to the bivariate analysis, academic performance ($p<.01$), perceived parenting attitude ($p<.01$), and resilience ($p<.01$) were statistically significantly related to depression. Diabetic children with higher academic performance were more depressed and this finding contradicts the reports of Lee et al. (1998) and Kovacs et al (1990). Academic performance in school is one of the important factors influencing the self concept of children because many children consider their academic performance as self-efficacy. However, in this study, children with better academic performance reported higher depression and lower resilience. This may be partially explained by stress caused by pressure from mothers to perform better at school. The result of bivariate relationship between parenting attitude and academic performance shows that academic performance is negatively and significantly ($p<.05$) related to parenting attitude. This means that academic performance of children with restrictive and hostile parenting attitudes are better. Thus, relationship between academic performance and depression may show different pattern among chronically ill children in Korea from children in the USA. However, this needs further study with larger sample.

When multiple regression analysis was done, academic performance ($p<.000$), perceived parenting attitude ($p<.01$) and

resilience (p<.05) were still statistically significant. This result means that parenting attitude and resilience in children have significant effect on the level of depression even after other variables are controlled. Children with affectionate and permissive parents and high resilience showed significantly low scores of depression. Park (1996) also reported parenting attitude was related to depression in diabetic children. Chronic illnesses of the children, such as DM, cause excessive stress and burden to the family. Parents of diabetic children have to ensure the best possible conditions for their children by checking blood sugar and urine and providing healthy diet and exercise opportunities. When parents fail to provide proper care for their diabetic children, parents may develop negative emotional conditions, including depression, anxiety and guilt (Metcalfe & Baum, 1992). Such experiences of the parents can affect the relationship with the child, and the parents may overprotect, reject, or oppose the child, who then may show problems in social relationships and emotions (Kim J. S. 1997b). According to the results of this study, when the parents' attitude is more affectionate and permissive, the child will experience less depression. This result underscores the importance of interventions to promote positive parenting behaviors to lower or to prevent depression in the children.

The study found a statistically significant relationship between depression and resilience in these children. The mean scores of the sub-concepts of resilience indicate that those three areas were highly associated with the level of depression. Resilience was significantly related to depression even after the effects of other variables were controlled. It was found that children with higher resilience showed lower depression, indicating that resilience is an important factor in strengthening psychological health in children with chronic illness. These results suggest the need for increasing resilience in children with IDDM through interventions designed to boost their interpersonal, coping, and intrapersonal capabilities (Kim, 2002; Park, 2000).

The results of bivariate analysis also show a high correlation between resilience and perceived parenting attitude (p<.01), which meant that the children with parents who were affectionate and permissive attitude showed higher resilience. Since the concept of resilience includes self-esteem, relationship with others, and coping skills, it is not easy to develop interventions specific to resilience. Thus, it will be more effective to develop educational programs for parents to improve parenting skills and attitude of affection and flexibility to lower depression in children with chronic illness (Choi, & Choi, 1999). Interventions to promote resilience in children with chronic illness would have lifelong effects and help them to cope with many challenges they have to face with their health problems. Helping children and parents to develop their adaptive capabilities is an important task for nurses involving in caring for children with DM or other chronic illnesses. It is necessary to develop parenting programs to promote resilience and adaptive capabilities of children with chronic illness.

CONCLUSION

The results showed that children with lower resilience scores, better academic performance, and whose parents were rigid and restrictive are significantly more depressed than their counterparts . It is important for nurses to identify strengths of children with chronic illnesses and help them to increase resilience level to prevent depression. Also, it is suggested to have parenting classes and counseling programs for mothers' of these children. Further study with children with other chronic illnesses may be necessary to identify variables associated with depression and resilience of these children.

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