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ABSTRACT

This study aimed to describe demographic, seizure, and family characteristics associated with good and poor adaptation to childhood epilepsy and contrast them with demographic, asthma, and family characteristics associated with good and poor adaptation to childhood asthma. Children with asthma were selected as a comparison sample because epilepsy and asthma are both chronic medical conditions that are characterized by unpredictable episodes that generally require regular intake of medication and regular visits to a physician. Data were gathered from the children (ages 8-12), their mothers, and their school teachers. The theoretical framework for the selection of family characteristics was the Double ABCX Model of Family Adaptation and Adjustment in which three factors affecting coping are family demands or stressors on the family, family adaptive resources, and family definition or attitudes toward the condition and its impact. Results showed that family strength variables were strong predictors of child adaptation to both epilepsy and asthma. The mother's attitude was the strongest predictor of child adaptation for asthma but was not a strong predictor for epilepsy. (14 references.) (JDD)

Childhood Epilepsy and Asthma: Family Strengths Associated with Child Adaptation

by

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Children with epilepsy have been found to have significantly poorer self-concepts (Austin, 1988; Margalit & Heiman; Matthews, Barabas & Ferrari, 1982), more behavioral problems (Hoare, 1984: Rutter, Graham & Yule, 1970), and more psychiatric disturbances (Scott, 1978) than do children with other chronic physical disorders. Rutter, Graham and Yule (1970) found the incidence of psychiatric problems to be much higher for children with idiopathic epilepsy (28.6%) than for children with other chronic physical disorders (11.6%) or for children in the general population (6.6%). Past research, which has focused primarily on investigating relationships between seizure variables and emotional problems, has led to inconsistent results indicating that additional variables should be considered in the research design. In a comprehensive review of the literature Hermann (1977) concluded that no powerful main effects from seizure variables accounted for the psychological problems found in persons with epilepsy. Hermann recommended that future research focus on interactions among seizure variables and psychosocial variables such as family attitudes, family environment and social economic class.

Little research is available that has investigated relationships between family variables and child adaptation to epilepsy. Furthermore, no research has contrasted relationships between family variables and child adaptation to epilepsy with that of another chronic physical disorder, asthma.

It was the purpose of the current study to describe

demographic, seizure and family characteristics associated with good and poor adaptation to childhood epilepsy and contrast them with demographic, asthma and family characteristics associated with good and poor adaptation to childhood asthma. This study is a part of a larger ongoing longitudinal research study investigating the factors affecting adaptation to childhood epilepsy that is funded by the National Institute of Neurological Disorders and Stroke.

Sample

Subjects were 254 children (128 with epilepsy and 126 with asthma), their mothers, and their current school teachers. All children were ages 8 through 12 years and had their health condition for at least 1 year. In addition, the children had no other chronic health conditions and had an IQ of at least 70. Children with asthma were selected as a comparison sample because epilepsy and asthma are both chronic medical conditions that are characterized by unpredictable episodes that generally require regular intake of medication and regular visits to a physician. Furthermore, neither group of children has any outwardly observable physical deformities. In contrast to asthma, however, children with epilepsy have a higher incidence of adaptation problems. Comparing predictors of adaptation to epilepsy with that of asthma allows for the identification of factors that could possibly account for the higher incidence of behavioral problems in children with epilepsy.

Methods

The study has a cross-sectional design with one data collection from each child, mother and the child's current school teacher.

The theoretical framework for the selection of family characteristics was the Double ABCX Model of Family Adaptation and Adjustment by McCubbin and Patterson (1983). In this model, three factors affecting coping are family demands or stressors on the family, family adaptive resources or the assets the family has to deal with stress, and family definition or attitudes toward the condition and its impact on the family. Family coping in turn affects family adaptation.

Instruments used to operationalize the concepts in the Double ABCX Model were: Family Demands: Family Inventory of Life Events and Changes (FILE) (McCubbin & Thompson, 1987); Family Adaptive Resources: Family Inventory for Resources for Management (FIRM) (McCubbin & Thompson, 1987); Family Definition: Parental Attitude Toward (Epilepsy-Asthma) in my Child (Attitudes were measured using the Fishbein Expectancy-Value Model [Austin, McBride, & Davis, 1984] and a semantic differential scale developed for this research); Parent Coping: Coping Health Inventory for Parents (CHIP) (McCubbin & Thompson, 1987); Family Adaptation: Family APGAR (Smilkstein 1978); Child Adaptation: Child Behavior Checklist (Achenbach & Edelbrock, 1983) and Child Behavior Checklist Teacher's Report Form (Achenbach & Edelbrock, 1986). Socioeconomic status was measured using a formula by

Green (1970). Episodes of seizures or asthma attacks were measured on 8-point scales as follows: (1) no episodes for 1 year or more, (2) no episodes for 6 months to 1 year, (3) no episodes for 3 months to 6 months, (4) no episodes for 1 month to 3 months, (5) 1-9 episodes in the past month, (6) 10-19 episodes in the past month, (7) 20-29 episodes in the past month, and (8) 30 or more episodes in the past month. Demographic and other seizure variables were age, gender, socioeconomic status, marital status, and age of onset of the epilepsy.

Data Analyses

For the analyses children were placed into good and poor adaptation groups based on their T-scores for the total behavior problems scores on the Child Behavior Checklist and the Teacher's Report Form. Those children with scores above the cutoff for normal behavior (T-Score of 70 or above) on both were placed in the poor adaptation group; those with scores within the range for normal behavior on both were placed in the good adaptation group. Within each sample the two adaptation groups were compared on demographic variables, health condition variables, and family variables in the Double ABCX Model. Questions regarding the statistical discrimination between the two groups were addressed using MANOVA and *t*-tests. In a second stage of analyses, discriminant analysis was carried out to identify the family, demographic and illness variables that were the strongest predictors of child adaptation for each sample. Results between epilepsy and asthma were then contrasted.

Results

In the epilepsy sample approximately 26% or 33 children were placed in the poor adaptation group and 34% or 48 children were placed in the good adaptation group. In the asthma sample approximately 11% or 14 children were placed the poor adaptation group and 54% or 68 children were placed the good adaptation group. Percentages of children in the poor adaptation groups for the two samples are similar to those found by Rutter, Graham and Yule (1970).

Epilepsy. Differences between the good and poor adaptation groups on demographic and seizure variables are presented in Table 1. Children in the poor adaptation group were found to be significantly younger than children in the good adaptation group. In addition, the children in the poor adaptation group were experiencing significantly more seizures than the children in the good adaptation group.

Differences were also explored for the two groups on the family variables in the Double ABCX Model. Means for the family variables from the model for the two groups are displayed in Tables 2 and 3. When there were two or more variables measuring the same concept such as family adaptation and attitudes, differences were explored first by MANOVA and interpreted with univariate F's. The families of the children in the poorly adapted group were experiencing significantly more demands or stressors than the families of children in the good adaptation group. In addition, family adaptation and family attitudes using

the Expectancy-Value Model were significantly lower for the families of poorly adapted children when compared to the families of the well adapted children. The lower score indicates that the mothers of children in the poor adaptation group had more negative affect associated with the epilepsy than the mothers of children in the good adaptation group. In addition, families of poorly adapted children had lower levels of family resources for all four of the resources measured: esteem and communication, mastery and health, extended family social support, and financial well-be‘ .g. Based on the proposed relationships in the Double ABCX Model it was surprising that there were no differences between the two groups on the mother coping strategies.

For the discriminant analysis all variables were entered and were then deleted using backward elimination based on minimization of Wilk's lambda. Results were statistically significant at $p < .001$ with a Wilk's lambda of .59 and a Chi Square of 38.9. The loading matrix of correlations between the 13 predictor variables and the discriminant function, as seen in Table 4, shows that the five primary predictors (loadings of .40 and above) were three family resource variables (esteem and communication, extended family social support, and financial well-being), family demands, and family adaptation.

Certainly, family strengths were strong predictors of adaptation to childhood epilepsy with the resource variables of family esteem and communication and extended family social support being the strongest predictors. In addition, families of

children who were poorly adapted were experiencing more stressors and had a lower level of adaptation. The percent of cases correctly classified was 82.7 %. Approximately 21% of the poorly adapted children were misclassified and 14.6% of the children of the well adapted children were misclassified.

Asthma. Demographic and asthma variables for the two adaptation groups for asthma were not found to be significantly different (see Table 5). It is interesting to note that the difference in age found in the epilepsy sample was not found in the asthma sample. In contrast to the epilepsy sample, there were more girls in the poor adaptation group for asthma. Differences in gender were not significant, however. Differences in family characteristics for the two groups are presented in Tables 6 and 7. Families of poorly adapted children were experiencing significantly more demands or stressors. No differences between the two groups were found on either of the two family adaptation measures. The comparison on mother's attitudes indicated that the score based on the semantic differential attitude scale, which reflects a cognitive attitude, was significantly lower for the poor adaptation group than the good adaptation group. The lower score on the attitude scale indicated a more negative attitude for the mothers of the children in the poor adaptation group when compared with the mothers of the children in the good adaptation group. Family resources of mastery and health, extended family social support, and financial well-being were significantly lower for the

families of the poorly adapted children. Once again no differences were found for parent coping variables.

The result of the discriminant analysis for the asthma sample was also statistically significant at .001 with a Wilk's lambda of .72. and a Chi Square of 23.2. The loading matrix of correlations between the 13 predictor variables and the discriminant function, as seen in Table 8, shows that the five primary predictors (loadings of .40 and above) were three family resource variables (financial well-being , extended family social support, and esteem and communication), attitude, and family demands. The strongest predictor was cognitive attitude. The percent of cases correctly classified was 82.1%. Approximately 14% of the poorly adapted children were misclassified and almost 19% of the well adapted children were misclassified.

Conclusions and Implications

Family strength variables were strong predictors of child adaptation to both epilepsy and asthma indicating that family variables are important factors associated with child adaptation to both epilepsy and asthma. The major difference between the predictors of child adaptation to epilepsy and asthma was mother attitude. The mother's attitude as measured by the semantic differential was the strongest predictor for asthma. Neither attitude variable loaded highly on the discriminant function for epilepsy.

Certainly this research has limitations. The cross-sectional design limits the ability to determine if the increased

stressors in the families and the low levels of family strengths found in the families of children who were poorly adapted led to the children's problems or vice versa. Longitudinal studies of children with newly diagnosed epilepsy and asthma are needed to determine causality. Implications clinically are that health professionals working with families with chronically ill children should intervene to enhance the family strengths of esteem and communication, extended family social support, mastery and health, and adaptation.

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Table 1
EPILEPSY: DEMOGRAPHIC and SEIZURE VARIABLES

	Good Adaptation n=48	Poor Adaptation n=33
Age (years)	10.8	9.8*
Percent Boys	50 %	58 %
SES	61.3	58.6
Single Parent	21 %	39 %
Seizure Frequency (1 to 8 scale)	2.7	3.7*
Age of Onset (years)	5.4	4.9

*p<.05

Table 2
EPILEPSY: FAMILY CHARACTERISTICS

	Good Adaptation n=48	Poor Adaptation n=33
Family Demands	7.9	12.9***
Family Adaptation		
Family APGAR	15.7	13.6*
Attitudes (Multivariate F=3.7*)		
Expectancy-Value Model	30.7	14.9*
Semantic Differential	4.1	3.7

*p<.05
**p<.01
***p<.001

Table 3
EPILEPSY: FAMILY CHARACTERISTICS

	Good Adaptation n=48	Poor Adaptation n=33
Family Resources (Multivariate F=4.5**)		
Esteem & Communication	35.9	31.3**
Mastery & Health	42.9	37.9**
Family Support	9.5	7.8**
Financial Well-Being	32.3	25.7**
Coping (Multivariate F=.6)		
Integration & Cooperation	40.8	39.9
Support, Esteem & Stability	30.4	31.4
Medical Consultation	17.3	17.4

**p<.01

Table 4
EPILEPSY: DISCRIMINANT ANALYSIS

Predictor Variables	Correlation with Discriminant Function	Univariate F (1,78)
Esteem & Communication	.50	13.4***
Extended Family Social Sup.	.49	13.0***
Total Family Stressors	-.46	11.3**
Family Adaptation	.45	10.7**
Financial Well-Being	.40	11.1**
Child's Age	.38	7.7**
Mastery & Health	.35	7.3**
Attitude (Affective)	.35	6.7*
Seizure Frequency	-.30	4.9*
Attitude (Cognitive)	.19	2.5
Family Integration	.10	1.4
Understanding Medical	.07	.1
Uses Social Support	-.03	.0

Wilks' Lambda = .59, X^2 = 38.9***

*** p<.001, ** p<.01, * p<.05

Table 5
ASTHMA: DEMOGRAPHIC and ASTHMA VARIABLES

	Good Adaptation n=68	Poor Adaptation n=14
Age (years)	10.2	10.4
Percent Boys	66 %	43 %
SES	61.0	58.2
Single Parent	13.2%	28.6%
Asthma Frequency (1 to 8 scale)	5.0	5.3
Age of Onset (years)	3.0	1.9

Table 6
ASTHMA: FAMILY CHARACTERISTICS

	Good Adaptation n=68	Poor Adaptation n=14
Family Demands	8.5	13.4**
Family Adaptation		
Family APGAR	15.7	13.6
Attitudes (Multivariate F=6.6**)		
Expectancy-Value Model	28.0	20.0
Semantic Differential	3.8	3.0***

**p<.01
***p<.001

Table 7
ASTHMA: FAMILY CHARACTERISTICS

	Good Adaptation n=68	Poor Adaptation n=14
Family Resources (Multivariate F=4.7)**		
Esteem & Communication	33.9	30.1
Mastery & Health	43.6	34.9**
Family Support	9.1	7.3*
Financial Well-Being	29.4	21.1*
Coping (Multivariate F=.23)		
Integration & Cooperation	42.2	40.7
Support, Esteem & Stability	30.8	31.2
Medical Consultation	17.7	17.4

*p<.05
**p<.01

Table 8
ASTHMA: DISCRIMINANT ANALYSIS

Predictor Variables	Correlation with Discriminant Function	Univariate F (1,76)
Attitude (Cognitive)	.69	13.4***
Financial Well-Being	.60	10.4**
Total Family Stressors	-.59	10.0**
Extended Family Social Sup.	.57	9.2**
Esteem & Communication	.53	7.8**
Mastery & Health	.39	7.4**
Family Adaptation	.36	4.0*
Family Integration	.36	3.7
Attitude (Affective)	.27	1.3
Understanding Medical	.22	1.1
Uses Social Support	.17	.2
Asthma Frequency	-.14	.2
Child Age	.08	.3

Wilks' Lambda = .73, X^2 = 23.2***

*** p<.001, ** p<.01, * p<.05

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