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Family Management Style as a Mediator between Parenting Stress and Quality of Life of Children with Epilepsy☆

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ABSTRACT

Purpose: To examine the possible relationship between parenting stress and quality of life of children with epilepsy together with the mediating effects of family management styles on this relationship.
Design and methods: We conducted a descriptive and exploratory study using data of participants were 93 parents with an epileptic child. Instruments were self-reported questionnaires including the Korean version of the Quality of Life (QOL) in Childhood Epilepsy Questionnaire (K-QOLCE), the Korean version of the Parenting Stress Index (PSI), and the Korean version of the Family Management Measure (FaMM). Six domains of FaMM were clustered into two domains: easy or difficult family management styles. Descriptive and Pearson correlation path analyses were used to analyze the data.
Results: The direct effects of PSI on QOL were not significant ($b = -0.21, t = -0.94, p = .349$). Indirect effects of PSI through easy family management styles on QOL were significant ($b = -0.33$, 95% CI = [−0.77, −0.05]). Additionally, two other effects (i.e., indirect effects through difficult family management styles and direct effects) were non-significant. All effects of PSI on QOL were fully mediated through easy family management styles.
Conclusion: Easy family management styles are the most important factor in predicting QOL in childhood epilepsy patients.
Practice implications: Comprehensive intervention programs are recommended for parents and families of epileptic children to promote positive perceptions of the child's life and to increase parental management ability of the child's condition and parental mutuality.

Introduction

Epilepsy, which is characterized by recurrent seizures, is the most common neurological disorder in childhood. Epilepsy is a disease that can lead to complex neurobehavioral and social condition that carries a heavy social stigma. Therefore, epilepsy is understood to be a stressful disease for both children and parents providing the required physical and psychosocial care of childhood epilepsy patients.

While a high percentage of children with epilepsy seem to function well, there is still a significant percentage who struggle with multiple aspects of daily life, seizure control, and side effects of drugs (Loiselle, Ramsey, Rausch, & Modi, 2016). Research has consistently reported poor quality of life (QOL) in children with epilepsy (Liu & Han, 2015; Momeni, Ghanbari, Bidabadi, & Yousefzadeh-Chabok, 2015; Wu, Follansbee-Junger, Rausch, & Modi, 2014). In pediatric epilepsy, clinical guidelines recommend that treatment goals consist not only of achieving seizure control, but also of attaining good QOL (Fayed et al., 2015). Many studies have examined biologic and psychosocial predictors of QOL, including seizures, automated external defibrillator (AED) side effects, the severity of comorbid conditions, disease duration, a number of required medications, child psychological functioning, as well as parental anxiety (Fayed et al., 2015; Ferro, 2014; Liu & Han, 2015).

Although previously examined biologic and psychosocial variables predict some variability in QOL outcomes in pediatric epilepsy, there are several important modifiable parent-related variables that have yet to be studied, including parenting stress. Parenting stress is a particularly important variable impacting QOL in children with other chronic conditions (Shinnar et al., 2017; Wu et al., 2014). Little is known, however, about the effects of parenting stress on QOL in children with pediatric epilepsy (Ferro, 2014).

Parents of children diagnosed with epilepsy face a unique set of family challenges (Mendes, Crespo, & Austin, 2017a, 2017b). The impact of a child's diagnosis with a chronic illness, such as epilepsy, is associated with increased parenting stress, unanticipated caregiving responsibilities, and negative effects on family life (Farrace, Tommasi, Casadio, & Verrotti,

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2013; Harden, Black, & Chin, 2016). Because of the unpredictable nature of childhood epilepsy, parents find themselves facing an uncertain future for themselves, their child, and their family. This uncertainly can lead to a decreased ability to cope, as evidenced by increased stress levels. Epilepsy comorbid effects (i.e., challenges in social, cognitive, emotional, and physical functioning) can also negatively impact parenting stress level and reduce QOL in parents and children with epilepsy (Smith et al., 2014). Reducing parenting stress is essential because the psychological well-being of a parent is directly related to the child's psychosocial adjustment to living with a chronic condition and to the child's QOL (Shinnar et al., 2017). Accordingly, intervention variables are needed in navigating the relationship between QOL of children with epilepsy and parenting stress.

Family management style refers to a family's response to health-related challenges, such as chronic illness. The term conceptualizes overall patterns of the family's response and explains the key elements of family members' efforts to manage a child's chronic condition, including how the family incorporates condition management into everyday family life (Knafl, Deatrick, & Havill, 2012). Specifically, family management style conceptualizes the interplay of the ways in which individual family members define key aspects of having a child with a chronic condition, the behaviors they use to manage the condition, and their perceptions of the consequences of the condition for family life. Considering the family management style represents overall family functioning or family coping and adaptation to a significant challenge such as chronic conditions of a child in a family (Knafl et al., 2012), it may function as a significant mediating variable related to children's adaptation to their illness and parenting characteristics.

Gaining an understanding of the unique ways that family management contributes to QOL may facilitate the development of family-based interventions to improve the QOL of children with epilepsy. On this premise, this study examines the possible relationship between parenting stress and QOL of children with epilepsy, seeking to identify and address any mediating effects of family management style on this relationship.

The following hypotheses will be tested:

Hypothesis 1. Parenting stress has a direct effect on the QOL of children with epilepsy.

Hypothesis 2. Family management styles may have a mediating effect between the parenting stress and QOL of children with epilepsy.

Methods

Setting and samples

A convenience sample of 93 was obtained comprising parents of children with epilepsy who met the inclusion criteria, understood the purpose of this study, and consented to participate.

Our target sample included pediatric epilepsy patients who (1) were enrolled in the pediatric neurology department of a university-affiliated tertiary medical center located in the metropolitan Seoul area, (2) had been diagnosed with childhood epilepsy with regular check-ups for more than six months, (3) had no health-related complaints at the most recent visit, and (4) had parents who were willing to participate in the study. All those who met the inclusion criteria were invited to participate in the study, yielding a convenience sample. Of an initial 97 participants recruited for the study, 95 parents completed the study requirements. After excluding two questionnaires due to incomplete responses, we included reports from 93 parents in the analysis.

Data collection

After obtaining approval from the Severance Hospital Institutional Review Board, data were collected with the cooperation of the hospital's pediatric neurology outpatient clinic staff from September 2013 to February 2014. Informed written consent was obtained from parents accompanying the pediatric patients prior to inclusion in the study. Self-reported survey questionnaires were provided to parents to fill out while the patients waited to be examined for regular check-ups with physicians in the outpatient clinic. The time required to complete the questionnaire was 15–20 min, and each participant received a token of appreciation following completion of the questionnaire.

Measurement tools

Demographic characteristics

Demographic data included parent age, educational status, family type, perceived economic status, as well as variables about the child including age, sex, name of disease, duration of suffering from the disease, and number of epileptic seizures per month. Also included was the parent's perceived severity of the child's condition using a 10-point visual analogue scale (VAS).

Quality of life

Quality of life was measured using the Korean version of the QOL in Childhood Epilepsy Questionnaire (K-QOLCE), validated by Lim, Kang, and Kim (2002), which is based on Sabaz's QOLCL (2000). The K-QOLCE instrument is a parent form consisting of five subscales with a five-point Likert scale (1: almost never to 5: almost always) used to measure various dimensions of childhood epilepsy including (1) physical function of the patient (seven items), (2) cognitive function of the patient (nine items), (3) emotional well-being of the patient (ten items), (4) social function of the patient (five items), and (5) behavior of the patient (nine items). Higher scores indicate greater degrees of QOL. In the original Korean version of the K-QOLCE, the value of Cronbach's alpha coefficient was 0.89. In this study, Cronbach's alpha coefficient was 0.97.

Parenting stress index

To measure the level of a parent's stress in caring for a child with a chronic illness, we used the Korean version of the Parenting Stress Index (PSI), validated by Lee, Chung, Park, and Kim (2008), which was based on the PSI of Abidin (2012). This self-reported questionnaire consists of 35 items, with five-point Likert scale (1: almost never to 5: almost always) measurements on dimensions including parental distress (12 items), parent-child dysfunctional interaction (12 items), and a difficult child domain (11 items). The domain for parental distress measures the level of parents' distress due to their role in parenting a child with a chronic disorder, the parent-child dysfunctional interaction domain reflects the extent to which the child meets the expectations of the parent, and the difficult child domain measures the behavioral characteristics of a child that cause parents to classify the child's behavior as either easy or difficult to manage. High PSI scores indicate that parents experience high stress in parenting their children. Cronbach's alpha coefficient values were 0.91 in the original Korean version of PSI (2008) and 0.94 in this study.

Family management styles

The Korean version of the Family Management Measure (FaMM) (Kim & Im, 2013), which was modified from the original FaMM to reflect Korean values, was used to assess family management styles in families with chronically ill children. The original FaMM was developed to measure parents' perceptions of family management when caring for a child with a chronic illness/condition (Knafl et al., 2011; Knafl & Deatrick, 2006; Knafl, Deatrick, & Gallo, 2008).

The Korean FaMM utilizes a five-point scale, like the original FaMM, anchored by responses of “strongly disagree” and “strongly agree,” and is composed of 53 items. Its six subscales include parents' perceptions of the child and his or her everyday life (Child's Daily Life, CDL), their perceived competence in taking care of their child's condition (Condition Management Ability, CMA), and their partnered mutual cooperation

Table 1
Demographic characteristics of participants.

Variable		Categories	N(%)	Mean (yr) ± SD	(*n* = 93) Range (yr)
Family	Respondent	Mother	90(96.7)		
		Father	3(3.3)		
	Age of parents who responded			41.12 ± 5.31	32–52
	Family structure	Nuclear	78(83.9)		
		Extended	15(16.1)		
	Perceived economic status	High	29(31.2)		
		Middle	47(50.5)		
		Low	17(18.3)		
	Parent's perceived severity			4.77 ± 2.58	1–10
Child	Age of child			10.12 ± 5.12	0.5–17.7
	Sex	Male	45(48.4)		
		Female	48(51.6)		
	Duration of illness			5.23 ± 4.94	0.6–17
	Number of seizures for one month			2.51 ± 6.59	0–30

and satisfaction to manage a child's condition (Parental Mutuality, PM). Additional subscales include parental perceptions of the work required to manage the condition (Condition Management Effort, CME), their perceptions of the extent to which having a child with a chronic condition makes life more difficult (Family Life Difficulty, FLD), and their perceptions of the seriousness of the condition and its implications for their child and family (View of Condition Impact, VCI).

Higher summative scores in CDL, CMA, and PM reflect an "easy" FaMM, which indicates greater ease in managing a child's condition (summative scores are obtained by summing these three scales). On the other hand, higher summative scores in CME, FLD, and VCI subscales reflect a difficult FaMM, representing greater difficulty in managing the condition (Zhang, Wei, Han, Zhang, & Shen, 2013). Cronbach's alpha coefficients in the original FaMM and in this study ranged from 0.72–0.91 and 0.65–0.89, respectively.

Data analysis

In order to examine the hypothesized model and related effects, a path analysis was performed utilizing PASW 18.0 and M-plus 6.0 software. Descriptive statistics were estimated for the demographics and the included variables to scrutinize characteristics of the sample. Reliability coefficients of the scales were examined by Cronbach's alpha coefficients. Additionally, Pearson correlation coefficients were estimated to discern relationships among the included variables. To investigate the assumption (i.e., a normality assumption) regarding the endogenous variables in the model, skewness and kurtosis coefficients were estimated and examined. Additionally, the variables showing significant correlation with the outcome variables were entered into the hypothesized model to control for confounding effects.

Standardized parameter estimates in the path analysis model were estimated by the full information maximum likelihood estimation method (FIML), which was expected to be good at handling missing data. Although its fit to data was supposed to be examined, the model of interest was saturated (i.e., zero degrees of freedom), thereby producing a perfect fit to the data. Thus, it was not possible to judge the appropriateness of the model, and fit indices in structural equation modeling could not be computed. The model was evaluated based on the meaning and statistical significance of parameter estimates rather than on its fit indices. In addition, bootstrapping and 95% confidence intervals were employed to test the statistical significance of the indirect effects and comparisons among indirect effects.

Results

General characteristics of the study sample

A total of 93 parents were included, comprised of 90 mothers (96.7%) and three fathers (3.3%), and the average age of parents who responded was 41.12 years old. Seventy-four (83.9%) patients with childhood epilepsy were from nuclear family households. Forty-seven participants (50.5%) perceived themselves to have middle-class economic status, followed by high ($n = 29$, 31.2%), and low ($n = 17$, 18.3%) economic status. The average perceived severity of the disease reported by family members on VAS was 4.77 out of 10. The average age of children with epilepsy was 10.12 years (range 0.5–17.7 years). There were 45 males (48.4%) and 48 females (51.6%). The duration of illness ranged from seven months to 17 years, with a mean of 5.23 years. The average number of seizures for one month was 2.51 (Table 1).

Descriptive statistics and correlations among variables

The descriptive statistics of the variables were reported in Table 2. In order to scrutinize whether or not a multivariate normality assumption was met, the skewness and kurtosis of the variables in the model were estimated. Multivariate normality in the model was assumed to be satisfied because those values of the variables in the model were smaller than the critical values (i.e., a skewness <3 and a kurtosis <10).

Because correlations of the outcome variable (i.e., QOL) with other variables were significant and less than the absolute value of 0.67 (range 0.26–0.64, *rs* < 0.001), it was assumed that multicollinearity among other variables did not produce problems in estimation of parameters and its standard errors. Additionally, as individuals showed higher scores of PSI, CME, FLD, and VCI and lower scores of CDL, CMA, and PM, higher levels of QOL were reported. Because of the high correlation coefficients among the three positive family management style factors and the high values among the three negative factors, two

Table 2
Descriptive statistics and covariances among the variables.

	1	2	3	4	5	6	7	8
1. Parenting stress	1.00							
2. Child's daily life	−0.52***	1.00						
3. Condition management ability	−0.72***	0.65***	1.00					
4. Condition management effort	0.65***	−0.74***	−0.66***	1.00				
5. Family life difficulty	0.74***	−0.77***	−0.82***	0.81***	1.00			
6. Parental mutuality	−0.60***	0.25***	0.56***	−0.36***	−0.49***	1.00		
7. View of condition impact	0.62***	−0.63***	−0.70***	0.68***	0.77***	−0.30***	1.00	
8. Quality of life	−0.67***	0.65***	0.60***	−0.62***	−0.62***	0.26***	−0.64***	1.00
N	82	93	88	92	88	90	88	80
M	82.27	17.14	44.51	10.77	36.45	29.23	27.82	136.98
SD	23.59	5.95	7.39	4.09	13.48	6.27	5.95	45.15
Skewness	0.02	−0.14	0.28	0.17	0.09	−0.08	−0.15	−1.02
Kurtosis	−0.93	−1.10	−0.55	−0.76	−1.06	−0.09	−0.37	0.84

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

dimensions for easy and difficult family management styles were created and used in the following analysis.

Testing the hypothetical model

Because three variables (i.e., perceived economic status, seizure frequency, severity) exhibited significant correlation with QOL, these variables were included as the control variables into the model. Because the model of interest was saturated (i.e., the degrees of freedom were equal to zero), the fit indices of the model were unable to be computed. Therefore, rather than the fit indices of the model, the r-squared values of two mediators and one outcome variable in the model were examined. Of variances in QOL, 69.0% were explained by all the other variables in the model. The explained proportions of variances in two mediators (i.e., easy and difficulty family management styles) were larger than 70%, implying that the two mediators in the hypothesized model well explained the PSI and covariates. It was assumed that the model of interest was well specified.

Direct, indirect, and total effects of variables

The final model with standardized estimates is presented in Fig. 1. Individuals showing higher values of PSI exhibited significantly lower values of an easy family management style ($b = -0.46$, $t = -9.92$, $p < .001$) and higher values of a difficult family management style ($b = 0.53$, $t = 8.68$, $p < .001$). Among the effects of PSI on others, the effects on easy family management styles were relatively larger than the effects on difficult family management styles (see Fig. 1). Additionally, the direct effects of PSI on QOL were not significant ($b = -0.21$, $t = -0.94$, $p = .349$).

Regarding the effects of all variables on QOL, only easy family management styles showed significant influences on QOL. Specifically, one unit increase in easy family management style correlated to a 0.71 unit increase in QOL ($b = 0.71$, $t = 1.96$, $p = .050$). Other effects on QOL in the model were non-significant (see Fig. 1).

Next, the indirect effects of PSI on QOL were estimated and examined. Total, direct, and indirect effects in the model are presented in Table 3. Indirect effects through easy family management styles were significant ($b = -0.33$, 95% CI = [−0.77, −0.05]). In contrast, the other two types of effects (i.e., indirect effects through difficult family management styles and direct effects) were non-significant. Therefore, the results of the hypothesized models indicated a full mediational model. In other words, all effects of PSI on QOL were fully mediated through easy family management styles. Accordingly, most of the effects due to PSI on QOL were explained by the indirect effects of easy family management styles.

The effect size of indirect effects was computed and examined. Of the total effects of PSI on QOL, 72.8% and 17.2% were accounted for by total indirect effects and direct effects, respectively. Specifically, the indirect effects of easy family management styles were responsible for 42.5% of the total effects of PSI on QOL. Although the direct effects of PSI on QOL were not significant, the non-significance of the effects might be due to the small sample size because of the relatively large effect sizes of the direct effects. Accordingly, findings from the hypothesized models should be interpreted with great consideration.

Table 3
Direct, indirect, and total effects in the hypothesized model.

	Estimates	Bootstrapping 95% CI
Total effects		
PSI → QOL	−0.765	[−1.077, −0.388]
Direct effects		
PSI → QOL	−0.208	[−0.797, 0.285]
Total indirect effects		
PSI → QOL	−0.557	[−0.934, −0.191]
Specific indirect effects		
PSI → easy FaMM → QOL	−0.325	[−0.766, −0.046]
PSI → difficult FaMM → QOL	−0.232	[−0.481, 0.102]

Note: PSI: parenting stress index, QOL: quality of life, Easy: sum of CDL (child's daily life), CMA (condition management ability), &, PM (parental mutuality). Difficult: sum of CME (condition management effort), FLD (family life difficulty), & VCI (view of condition impact). All estimates were unstandardized.

Discussion

This study examines relationships among parenting stress, family management style, and quality of life of children with epilepsy. Findings from this study supported our first hypothesis by total effects examination. Parenting stress is negatively related to quality of life of children with epilepsy after controlling for important confounders, including perceived economic status, seizure frequency, and perceived severity of the disease. The findings about parenting stress and quality of life of children with epilepsy in our study are in agreement with the findings of previous studies (Farrace et al., 2013; Smith et al., 2014; Wu et al., 2014).

Herein, parenting stress was measured with a focus on parental distress, parent-child interactions, and the extent to which a child's behaviors cause parental perceptions of a difficult child. Parents of children with epilepsy experience parental distress in a variety of ways, including feelings of being burdened, perceptions of parental incompetence, and feelings of restriction due to additional parenting responsibilities related to caring for children with this chronic condition. Moreover, parenting stress may be exacerbated by dysfunctional parent–child interactions brought about by disappointment or other negative responses if the child with epilepsy exhibits relatively underdeveloped social skills in comparison to typical children (Farrace et al., 2013; Reilly et al.,

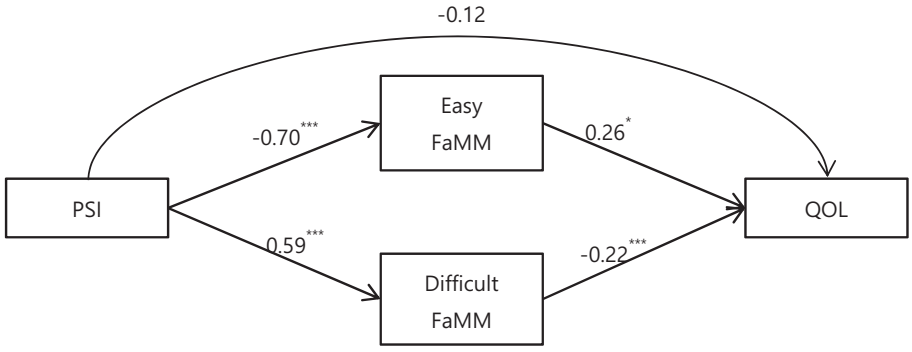

Fig. 1. Standardized estimates in the hypothesized model. Note. PSI: parenting stress index, QOL: quality of life, Easy FaMM: sum of CDL (child's daily life), CMA (condition management ability), & PM (parental mutuality). Difficult FaMM: sum of CME (condition management effort), FLD (family life difficulty), & VCI (view of condition impact). The regression coefficients of control variables on mediators and an outcome were not reported to simplify the display of the model. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

2018). In addition, parental stress can be due to behavioral characteristics in children, which cause parents to perceive that a child with a chronic disorder is difficult to manage or care for. Children with epilepsy can have a high incidence of behavioral problems, such as loss of concentration, hyperactivity, nervousness, and frequent seizures caused by organic brain damage or due to side effects of anticonvulsant medications (Farrace et al., 2013). Accordingly, we need to help parents of children with epilepsy learn how to facilitate coping strategies in their children by helping them understand their new parenting responsibilities and their child's behavior.

In our model, however, direct effects of Parenting Stress Index (PSI) on QOL were not explained. On the other hand, our second hypothesis was partially supported by examination of the indirect effects of PSI on QOL. Easy family management styles were verified as the most important factor in predicting QOL of children with epilepsy. In other words, this result suggests that, when easy family management styles are controlled as an intervention factor, the effects of parenting stress on QOL can be reduced.

The easy family management style measure for a child's daily life (CDL) reflects a parent's perception of the extent to which life is normal for the child despite the condition. Because social stigma casts a long shadow on epilepsy, parental perception of the normalcy of life for a child with epilepsy has a huge impact on the QOL of the child (Benson et al., 2016; Mendes et al., 2017a, 2017b). The dimension of CDL acts as a mediating variable between the child's QOL and parenting stress because it allows parents to recognize that the child is living a normal life (and thereby, parents are less influenced by any social stigma associated with the chronic condition of their child). Accordingly, it is crucial to include various interventions to help a child live a normal life despite epilepsy. In other words, family interventions that assist parents in positively overcoming social stigmas should be included to increase a child's chances of leading a normal life.

Another key variable to mediate a child with epilepsy's QOL is parental condition management ability (CMA). The dimension of CMA not only includes the regular responsibilities of parenting, but also the parent's ability to manage the child's condition in terms of providing medications and handling seizures. Thus, as a baseline, interventions to improve CMA stand to increase a parent's confidence in taking care of a child with epilepsy. Interventions for CMA may also prevent negative parenting tendencies, such as overprotection or restriction, which are common among parents of children with chronic illness (Kim, Chung, & Lee, 2015; Rodenburg et al., 2013). At the same time, through positive parenting, interventions to improve CMA may increase the child's QOL.

The last key variable is parental mutuality (PM), which indicates a couple's mutual understanding of values, support, and collaboration around caring for a child with chronic epilepsy disorder. The mutual satisfaction of a couple from which PM ensues has been mentioned as an important variable in family management. As a useful and crucial family resource, couple collaboration is especially important in times of difficulty (Hong, 2016). Strong couple collaboration reduces stress levels for parents because their attention is not fully on their child's problems. Moreover, encouragement and appreciation between the couple strengthens confidence in managing the child's problems and risks, thereby acting as a driving force for persistent, good care on the part of parents (Han & Park, 2015; Koh, 2018). Parental mutuality thereby positively influences the child's QOL. We suggest that education programs on treatment processes, management methods, and parenting be provided together in order to establish mutual understanding and support systems between couples.

An interesting finding of this study is that dimensions reflecting only easy family management styles (as opposed to difficult family management styles) were shown to be significant intervention variables. Easy family management styles indicate positive family management styles and strength. Recent studies have emphasized the importance of identifying positive abilities or strengths rather than negative aspects or weaknesses in terms of beneficial interventions for chronically ill children and their families (Hilliard, McQuaid, Nabors, & Hood, 2015). Accordingly, we need to design interventions to encourage positive management styles and strength for families with epileptic children.

Quality of life is an essential factor in the assessment of how epilepsy impacts everyday functioning and treatment (Momeni et al., 2015). It is important for caretakers to enhance the quality of life of children with epilepsy. To develop interventions, including contributing factors of family management styles, which are amenable to positive change stands to improve manageable aspects of the quality of life of children living with chronic epilepsy disorder.

Practice implications

In clinical practice, interventions and caretaking for epilepsy are considered important aspects of the enhancement of patient QOL. Although there are many ways to enhance the QOL of a child with epilepsy, from the perspective of family-centered care according to the results of our study, we suggest the following. Specific intervention strategies to reduce parenting stress around a child's behavioral problems, lack of family interaction, mutual understanding, and the extra burden of additional parental responsibilities should be developed and applied for parents of children with epilepsy. Parents must quickly learn how to respond to crisis situations involving a child's chronic illness and modify the daily activities of the family to accommodate the emotional and physical needs of themselves and a child with epilepsy. According to our study, the most effective strategies to improve QOL in children with epilepsy were to facilitate positive aspects of family management style. Thus, the targeted intervention program should be designed to help parents and families lead a normal family life despite the chronic disease of a child. The program should focus on a child's strengths rather than on weaknesses or difficulties associated with the condition, thereby steering away from social stigma and establishing normalcy in the child's life. Easiness in family management should also include the continued education to boost parental confidence in caring for and managing childhood epilepsy, thus focusing on positive parenting. Most importantly, we also strongly suggest the improvement of parental mutuality to help parents support each another in co-parenting for a child with epilepsy. By developing and implementing such targeted interventions, it is hoped to ultimately improve the quality of life of children with epilepsy.

Limitations

Our study has several limitations. First, potential bias may emerge from unmeasured variables affecting QOL in children with epilepsy either directly or indirectly. These factors include socio-contextual variables affecting family management style such as social support and preferred coping mechanisms among families facing childhood chronic disease, as well as variables related to individual children, such as disease condition and psychosocial adjustment. Second, the quality of life of children with epilepsy was measured according to parents' reports only. The direct answer on QOL from the child with epilepsy needs to be included in the further study, which may be helpful to confirm the consistency between the reports from children and parents on QOL. Moreover, most of the respondents in this study were mothers, and fathers may provide different responses. Each parent's responses should be analyzed to identify and address any potential differences. Third, as the small sample size and convenience sampling may limit the generalization of the study findings, we suggest the replication of the study to confirm the study results across various regions with larger sample.

Conclusion

By examining the relationships among family variables such as parenting stress levels and family management styles on the quality of life

of children with epilepsy, we found that parenting stress levels and family management styles impact the QOL of children in both direct and indirect ways.

We found that parental perceptions of normalcy in the life of children with chronic conditions improve QOL for these children. Therefore, support programs are necessary to help overcome social stigmas and to foster acceptance of a child's epilepsy. In addition, it is also essential to develop and apply comprehensive interventions that increase parental levels of child management ability and parent mutuality and satisfaction.

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CRediT authorship contribution statement

YeoJin Im: Methodology, Writing - original draft, Writing - review & editing, Conceptualization, Investigation, Project administration, Supervision. **YoungIl Cho:** Methodology, Writing - original draft, Writing - review & editing, Data curation, Formal analysis. **DongHee Kim:** Methodology, Writing - original draft, Writing - review & editing, Funding acquisition, Conceptualization, Investigation, Project administration, Supervision.

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