

# Systemic Family Therapy of Comorbidity of Anxiety and Depression with Epilepsy in Adolescents

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**Objective** The aim of this study was to find if systemic family therapy (SFT) does work in anxiety and depression with epilepsy in adolescents (ADA-E).

**Methods** 104 adolescents with epilepsy, aged 13–20 years old, were included from December 2009 to December 2010, the enrolled patients were with anxiety [Hamilton Anxiety Scale (HAMA) score  $\geq 14$  points] or depression [Hamilton Depression Scale (HAM-D) score  $\geq 20$  points]. The patients were randomly divided into the control group (n=52) treated with antiepileptic drugs (AED) and the intervention group (n=52) undergone Systemic Family Therapy (SFT) as well as AED. The AED improvements, anxiety and depression scores, Social Support Rating Scale (SSRS), Family Assessment Device (FAD) and scale of systemic family dynamics (SSFD) were observed after 3-month treatment.

**Results** The frequencies of epileptic seizures in intervention group was decreased much more significantly than the control group ( $4.22 \pm 3.54$  times/month vs.  $6.20 \pm 5.86$  times/month,  $p=0.04$ ); and the scores of anxiety ( $9.52 \pm 6.28$  points vs.  $13.48 \pm 8.47$  points,  $p=0.01$ ) and depression ( $13.86 \pm 9.17$  points vs.  $18.89 \pm 8.73$  points,  $p=0.02$ ) were significantly decreased than the control group; meanwhile, the family dynamics and family functions were significantly improved, and the social support was also increased ( $p < 0.05$ ).

**Conclusion** SFT combined with AEDs had better efficacies than AEDs alone, not only the frequency of epileptic seizures was decreased, but also the patients' anxiety and depression were improved, and the family dynamics, family functions and social support were improved.

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**Key Words** Adolescents with epilepsy, Anxiety, Depression, Systemic family therapy, Antiepileptic drug therapy.

## INTRODUCTION

Anxiety and depression were the most common problems of mental health problems in adolescents with epilepsy,<sup>1,2</sup> almost one-third of epilepsy patients suffer from depression and anxiety, which is similar to the prevalence of drug-refractory epilepsy,<sup>3</sup> although they were common but frequently underdiagnosed<sup>4</sup> and their role in quality of life (QOL) is receiving increasing scrutiny.<sup>5</sup> Moreover, some antiepileptic drugs (AEDs) have mood stabilizing and anxiolytic effects, while others may worsen psychiatric symptoms<sup>6</sup> and its harms had obtained

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attentions from the community.<sup>7-11</sup> It has been confirmed that high scores of anxiety and depression are associated with occurrence of seizures in public places<sup>12</sup> various factors among epilepsy, anxiety, depression, individuals, families and communities, as well as the internal factors of family dynamics, family functions, social support, anxiety and depression, were systemically interconnected, the changes of every components inside the system would lead to the changes of other components. Some study suggested that enhancing family and emotional supports and decreasing depression could promote the quality of patient with epilepsy, and instrumental support may play a role in decreasing anxiety.<sup>13</sup> Epilepsy can be associated with profound physical, social and psychological consequences,<sup>14</sup> and the Systemic Family Therapy (SFT) was one kind of group psychotherapy treatment established on the above-mentioned associations and with families as the therapeutic units,<sup>15-17</sup> through scientifically assessing the relevant circumstances of young people with epilepsy, it could establish stable

and reliable good therapeutic relationships with the epileptic adolescents and their family members, then solve the problems targeting the whole family, fundamentally change the disordered family dynamics models, and evoke the concepts of new development, so that the effects possessed by the resources inside every member might be developed as much as possible. This study observed the effects of SFT, which was performed at the same time of AEDs treatment, on ADAE patients, aiming to explore the feasibilities and effectiveness of SF in intervening children's behavioral problems.

## METHODS

### Subjects

104 adolescents with epilepsy were diagnosed by clinics and EEG in the outpatient and inpatient of Epilepsy Center, Department of Neurology, the First Affiliated Hospital of Chongqing Medical University, from December 2009 to December 2010, all patients were assessed by the Hamilton Anxiety Scale (HAMA) and showed that the presence of clinically significant anxiety symptoms (HAMA score  $\geq 14$  points) or the assessment of Hamilton Depression Scale (HAMD) showed the presence of clinically significant depression symptoms (HAMD score  $\geq 20$  points). Inclusion criteria: 1) aged 13–20 years old; 2) were receiving AEDs treatment, and the drug concentration was stable; 3) with junior high school and higher education, could read and express well; 4) the Wechsler Intelligence Scale (WISC-R) measured: IQ  $\geq 90$  points; 5) informed and consented by the patients and their guardians. Exclusion criteria: 1) associated with other systems' diseases (heart and liver dysfunctions, hypertension, diabetes, etc.); 2) long-termly administrated antiepileptic drugs, antidepressants and antipsychotics drugs that would affect the nervous system besides antiepileptic drugs; 3) the Wechsler intelligence scale measured: IQ  $< 90$  points; 4) with hearing loss or vision disorders; 5) with consciousness and status epilepticus; 6) with mental illness, such as schizophrenia, affective disorders, anxiety disorders, personality disorders and child-adolescent mental disorders, etc; 7) with histories of alcohol, drug abuse and psychoactive substances; 8) refused to participate by the patients or their guardians. This study was conducted in accordance with the declaration of Helsinki. This study was conducted with approval from the Ethics Committee of the First Affiliated Hospital of Chongqing Medical University. Written informed consent was obtained from all participants.

The 104 adolescent patients were randomly divided into the control group (n=52) and the intervention group (n=52), the control group was only applied AEDs, while the intervention group was added SFT on the basis of AEDs, the treatment period was 3 months.

### Research methods

The basic clinical data and epileptic seizure characteristics of patients included were internalized, all patients were performed the psychological evaluations before and after the study: 1) HAMA: HAMA included 14 items, established by Hamilton in 1959,<sup>18</sup> and was one of scales those were widely used for the assessments of psychiatric doctors. 2) HAMD: HAMD was compiled by Hamilton in 1960,<sup>19</sup> widely used to assess the clinical depression status, this study used 24 items. 3) Social Support Rating Scale (SSRS): SSRS was compiled by Xiao in 1986,<sup>20</sup> including 3 dimensions, and a total of 10 items, to measure the individual's social relationships. 4) Family Assessment Device (FAD): this questionnaire contained 60 items, and the seven dimensions (problem solving, character, communication, emotional involvement, emotional reactions, behavior control and general features) constituted seven subscales.<sup>21</sup> 5) scale of systemic family dynamics (SSFD): SSFD was compiled and revised by Kang<sup>22</sup> and Yang,<sup>23</sup> based on the Heidelberg family dynamic theory, and was the only localized family dynamics. The revised scale used 29 items and 4 dimensions to reflect the family dynamic characteristics. The 4 dimensions included family atmosphere (including item: 3, 7, 8, 15, 16, 18, 20, 22, 25, 28, 19), personalization (including item: 1, 2, 5, 10, 13, 24, 27, 30), system logic (including item: 6, 11, 12, 14, 19, 21) and disease concepts (including item: 9, 17, 23, 26).

### SFT intervention measurements

The intervention was performed once every half month, with a total of six times, and each time was 80 min.<sup>24</sup> The specific procedures were as follows: 1) beginning process (once): tasks: introduced STF and its purpose, secret-keeping commitment, explored the native upbringing experience and family background, assessed family functions, family dynamics and social support, psychological assessment, and arranged the treatment goals. 2) in-depth process (4 times): investigated the differences and interactions of family behaviors  $\rightarrow$  positively assigned its meaning, and orientated the resources  $\rightarrow$  "de-diagnose"  $\rightarrow$  investigated the dynamics of changes  $\rightarrow$  investigated the targets of changes  $\rightarrow$  promoted the changes. Homework: "merit bombing"; recorded the "secret red tent"; "role-playing"; I could change to "72" kinds. 3) ending process (once): strengthened the changes, evaluates, reviewed and feedback.

### Study endpoint

1) Scale assessment: HAMA, HAMD, SSRS, FAD, SSFD. 2) self-assessment: self-fulfilling prophecy during the treatment process (I could change to "72" kinds), recorded the secret red tent. 3) observation by others and self-evaluation: recorded

self-changes observed by other family members, as well as good changes mutually observed among family members.

### Statistical analysis

The baseline characteristics of the two groups were performed the chi-square test and t-test for the comparisons among various dimensions; the questionnaire score used the paired t-test to evaluate the changes before and after treatment, meanwhile, the scores of various scales (dimensions) between the two groups after treatment used the independent sample t test to evaluate the differences of results between the two groups after treatment, with  $p < 0.05$  considered as the statistical significance.

## RESULTS

### General information

Age, sex and education degree between the 2 groups had no significant difference ( $p > 0.05$ ), and duration of epilepsy, seizure frequency, seizure type and medication form between the 2 groups showed no significant difference ( $p > 0.05$ ) (Table 1).

### Comparison of seizure frequencies and scale scores between the 2 groups before and after treatment

The baseline seizure frequencies, scores of anxiety and depression, family dynamics, family functions and SRS between the two groups showed no significant difference before treatment. At the end of treatment, the results showed that only seizure frequency of the control group was decreased than that

before treatment, while the intervention group showed not only the significantly decreased seizure frequency, but also the significantly decreased scores of anxiety and depression, while family dynamics, family functions SRS were improved (Table 2).

## DISCUSSION

This study found that the seizure frequency of the control group was significantly decreased after treatment ( $p < 0.05$ ), indicating the effects of AEDs in treating epilepsy alone, consistent with the literatures.<sup>25,26</sup> This study also found that compared with the control group, the seizure frequency of the intervention group was decreased much more significantly, and the difference was statistically significant ( $p < 0.05$ ), indicating that the efficacies of AEDs combined with SFT were much better than single AED in controlling seizures.<sup>27</sup>

Meanwhile, the scores of anxiety and depression of the intervention group were significantly lower than those in the control group, and the reasons might include: 1) the decreased seizure frequencies of adolescents with epilepsy made the patients' fears and tensions towards the disease eased,<sup>28</sup> 2) the family dynamic characteristics, family functions and social support were changed. The alleviation of anxiety was related with the improvements of family sentiments, as well as the increased democracy, openness and subjective support of family behaviors; the alleviation of depression was related with the improvements of family sentiments, the increased subjective support, and the transition of behavioral control from severity

**Table 1.** Comparison of pre-test between the control group and the intervention group

Comparison project	Control group (N=52)	Intervention group (N=52)	$\chi^2/t$	p
Male (N, %)	25, 48.08%	26, 50.00%	0.038	0.844
Age	16.98±2.06	17.14±1.82	0.42	0.68
Disease course	6.59±5.60	5.38±5.00	1.16	0.25
Education degree	-	-	0.971	0.325
Junior high school and lower	31	26	-	-
High school and higher	21	26	-	-
Seizure type	-	-	0.042	0.838
Generalized tonic-clonic seizure+ complex partial seizure	34	33	-	-
Other seizure types	18	19	-	-
Seizure form	-	-	0.041	0.839
Single seizure	32	33	-	-
≥2 seizure forms	20	19	-	-
Medication	-	-	0.038	0.844
Monotherapy	27	26	-	-
Combined therapy	25	26	-	-

to democracy.<sup>29</sup> The study also found that anxiety and depression interacted, and exhibited the parallel relationships.<sup>30</sup>

Thirdly, this study found that the family dynamics, family functions and social support of the intervention group had changed, among which the family functions of the intervention group were significantly improved,<sup>31</sup> and the communication among family members was clear and effective, the role-division was clear, with mutual acceptance, appropriate emotional responses and clear boundary, so that the problem-solving skills were improved, and the execution of family tasks was enhanced, the abilities of adapting the changes when the tasks changed were improved. It was also found during the intervention process that the parental modes of rearing epileptic teenagers changed a lot, the emotional comfort from parents was increased, while the excessive interference, rejection and punishments were reduced, therefore the family environments were improved, the communication ways between young people with their parents were changed, and the patients' life qualities were significantly improved. This study found that the overall social support, material and financial support, subjectively-felt support and utilization rates towards various sup-

ports of the intervention group were significantly increased, indicating that SFT increased the overall social support towards the adolescents with epilepsy, and the patients subjectively felt that they were more understood, as well as morally respected and supported.<sup>32</sup>

In addition, the control group also showed some changes of family dynamics, family functions and social support before and after treatment, the system logic, overall functions, behavior control, emotional reactions and problem solving all developed towards positive directions, while the family atmosphere, individualization, disease concepts, emotional involvement, roles, communications and total score of family functions were deteriorated towards the worse directions, which further validated the family theory, crisis theory and Josselson separation-individualization theory, indicating that the ADAE's abilities of family self-regulation and repairing were limited, therefore the SFT intervention was necessary.<sup>33</sup>

This study showed that if the seizure frequency was decreased, anxiety and depression were relieved, the family atmosphere would be pleasant and relaxed, the mutual understanding, mutual respect and mutual relations among family

**Table 2.** Comparison of seizure frequency and scale scores between the 2 groups

Comparison project	Control group (N=52)		Intervention group (N=52)	
	Baseline	Endpoint	Baseline	Endpoint
Seizure frequency	7.00±6.85	6.20±5.86*	6.50±6.77	4.22±3.54*†
Hamilton Anxiety Scale	13.76±8.76	13.48±8.47	13.41±7.83	9.52±6.28*†
Hamilton Depression Scale	20.35±9.55	18.89±8.73	22.55±9.76	13.86±9.17*†
Scale of systemic family dynamics	-	-	-	-
Family atmosphere	28.70±12.02	29.37±11.82	25.78±11.29	19.83±7.30*†
Individuation	20.80±9.19	20.83±8.58	19.53±7.57	17.21±6.55*†
Disease concepts	11.33±3.36	11.41±3.26	11.69±3.90	8.76±3.48*†
System logic	11.93±4.31	12.78±4.91	12.05±5.01	13.67±6.30*†
Family Assessment Device	-	-	-	-
General functions	19.33±7.46	18.91±7.12	19.03±7.17	17.59±5.10*
Behavior control	18.15±6.46	18.37±6.25	17.36±5.31	13.69±3.17*†
Emotional involvement	12.98±4.84	13.305.46	12.19±3.60	10.79±2.88*†
Emotional reactions	12.93±4.76	12.50±4.41	12.19±3.60	10.83±3.56*†
Character	19.37±7.45	19.72±6.37	18.93±6.61	17.40±5.25*
Problem Solving	12.93±4.76	12.79±4.21	11.95±3.17	11.19±3.13*†
Communication	18.48±7.05	18.527.45	16.43±4.90	13.33±4.29*†
Total Family functional scores	94.98±22.40	100.85±19.75	94.81±13.58	90.91±17.71*†
Social Support Rating Scale	-	-	-	-
Total score of Social support	34.83±11.53	34.52±9.97	31.34±12.97	41.41±10.61*†
Objective support	12.24±5.42	12.61±5.03	10.41±5.80	13.90±4.99*
Subjective support	16.67±6.38	16.24±6.07	15.05±6.87	20.84±7.54*†
Utilization of Support	5.91±2.05	5.80±1.89	5.88±2.32	6.67±2.43*

Compared with the baseline of the same group, \*p<0.05; compared with the endpoint of the control group, †p<0.05

members, as well as social supports actually obtained and felt, would be increased, and these changes would also further promote the declining of seizures frequency, and vice versa. Therefore, the factors that caused the mood changes of ADAE were not isolated and static, but interrelated, dynamic and cause-effect circulated; they were not linear, while formed a ring-feedback process, interrelated, mutually restricted and mutually influenced, the SFT intervention was feasible and effective towards ADAE.<sup>34</sup>

In summary, SFT theory and techniques were the main reasons towards the remarkable results achieved in this study, the therapists should establish stable and good therapeutic relationships with the epileptic youth and their family members on the basis of maintaining “neutrality”. At the same time, the patients should not be considered as the family troublemakers, on the contrary, they were just the bearers, expressors and victims of “system problems”, the treatments should not target the inner conflicts and personality traits of individuals, but should actively look for the breaking points of “disturbance” from the view of family. Finally, this study introduced the system theory, information theory and cybernetics to induce “the second level change” of families, namely fundamentally changed the disordered family dynamics model; the intervention targeted directly towards the rigid, aging, or invalid family structures and disordered family relationships, used the differentiated questioning, circulation questioning, feed-forward questioning, alteration and explanation, symptom prescriptions, positive meaning assignment and homework to make the family behaviors re-assign their meanings, promote the family members to change the family “rules”, improve their family dynamics, family functions, family relationships and social support, thus encouraging every member to develop the effects possessed by the resources inside them as much as possible

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