Factors Influencing Self-Concept of Adolescents with Epilepsy

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Abstract:

This cross-sectional descriptive study was designed to investigate the self-concept of adolescents with epilepsy and its influencing factors of gender, severity of epilepsy, and family functioning on the self-concept of adolescents with epilepsy guided by Bracken's Self-Concept Model. A total of 82 adolescents with epilepsy, 12-18 years of age, were selected by purposive sampling from pediatric neurology outpatient clinics from three tertiary care medical centers, who had a minimum standard score above 70 on the Peabody Picture Vocabulary Test, Fourth Edition. Participants completed the Demographic Questionnaire, Epilepsy Severity Scale, Piers-Harris Self-Concept Scale, 3rd Edition, and General Functioning 12-item Subscale. Neurology clinic charts were reviewed for the type and frequency of seizures, and the number of antiepileptic drugs. The data were analyzed using descriptive statistics and multiple regression. The findings revealed that the participants had an average level of self-concept overall and in most domains. However, they had a low level in two domains of self-concept: happiness and satisfaction, and intellectual and school status. Epilepsy severity and family functioning could co-predict overall self-concept by 7.10 % significantly, while there was no correlation between gender and self-concept. Based on the study findings, nursing implications should screen individuals' self-concept (particularly happiness and satisfaction, intellectual and school status), and emphasize the severity of epilepsy and family functioning to promote adolescents with epilepsy for a positive self-concept.

Keywords : Adolescents, Epilepsy, Self-concept

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ปัจจัยที่มีอิทธิพลต่ออัตมโนทัศน์ของวัยรุ่นโรคลมชัก

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บทคัดย่อ :

        การศึกษาครั้งนี้เป็นการวิจัยเชิงพรรณนา มีวัตถุประสงค์เพื่อศึกษาระดับอัตมโนทัศน์และความสัมพันธ์เชิงทำนายของปัจจัย เพศ ความรุนแรงของโรคลมชัก และการทำหน้าที่ของครอบครัวที่มีอิทธิพลต่ออัตมโนทัศน์ของวัยรุ่นโรคลมชัก โดยใช้กรอบแนวคิดของแบรคเคน กลุ่มตัวอย่างคือ วัยรุ่นโรคลมชักจำนวน 82 คน อายุ 12-18 ปี ผ่านตามเกณฑ์คัดเลือกแบบเฉพาะเจาะจงตามคุณสมบัติที่กำหนด เข้ารับบริการที่คลินิกโรคระบบประสาทเด็กของโรงพยาบาลระดับตติยภูมิ 3 แห่ง และมีคะแนน Peabody Picture Vocabulary Test-Fourth Edition มากกว่า 70 คะแนน โดยตอบแบบสอบถามข้อมูลส่วนบุคคล อัตมโนทัศน์ การทำหน้าที่ของครอบครัว และรวบรวมข้อมูล ประเภทและความถี่ของการชัก รวมทั้งการได้รับยากันชักจากเวชระเบียน วิเคราะห์ข้อมูลด้วยสถิติบรรยายและการถดถอยพหุคูณ ผลการศึกษาพบว่า กลุ่มตัวอย่างมี คะแนนอัตมโนทัศน์โดยรวมและรายด้านส่วนใหญ่อยู่ในระดับปานกลางส่วนอัตมโนทัศน์ด้านความสุขและความพอใจ และด้านสติปัญญาและสถานภาพในโรงเรียน อยู่ในระดับต่ำ และพบว่าตัวแปรความรุนแรงของโรคลมชักและการทำหน้าที่ของครอบครัวสามารถร่วมทำนายอัตมโนทัศน์ได้ร้อยละ 7.10 อย่างมีนัยสำคัญทางสถิติ ส่วนตัวแปรเพศไม่มีความสัมพันธ์กับอัตมโนทัศน์ จากผลการศึกษาครั้งนี้มีข้อเสนอแนะว่า พยาบาลควรประเมินระดับอัตมโนทัศน์ของวัยรุ่นโรคลมชัก โดยเฉพาะในด้านความสุขและความพึงพอใจ และด้านสติปัญญาและสถานภาพในโรงเรียน รวมทั้งประเมินระดับความรุนแรงของโรคลมชัก และการทำหน้าที่ของครอบครัว เพื่อหาแนวทางในการส่งเสริมอัตมโนทัศน์ทางบวกในกลุ่มวัยรุ่นโรคลมชัก

คำสำคัญ : วัยรุ่น โรคลมชัก อัตมโนทัศน์

Introduction

Epilepsy is the most prevalent neurological disorder in the world. The incidence of epilepsy is also high in adolescents.[1] Adolescents with epilepsy who visited the pediatric neurology outpatient clinic of the Faculty of Medicine, Ramathibodi Hospital, and Neurological Institute of Thailand in 2017 were 369 and 1,030, respectively. This group represented more than half of all pediatric patients in these settings.[2,3] Epilepsy has consequences for each phase of development in childhood, including behavioral, psychological and emotional, social, and cognitive components.[4] All of the above factors contribute to the incidence of psychological reactions such as anxiety, depression, body image distortion, anhedonia, and stigma.[5,6] These effects result in adolescents with epilepsy having negative perceptions of themselves or negative self-concept.[7,8]

Self-concept, commonly known as self-esteem or self-image, is a behavioral pattern that defines how people perceive themselves. This behavior occurs as a result of both direct and indirect interactions with the environment, and it is significantly influenced by the expectations and expressions of important persons in adolescents' lives.[9] Adolescents with epilepsy have shown lower self-concept, compared to healthy or other chronic diseases adolescents.[10,11,12] This essence may have colored and contaminated multiple facets of the adolescents' lives.

For children and adolescents with chronic illnesses, self-concept is crucial. In Orem's self-care theory, it is one of the basic conditioning factors, and overall self-concept is correlated with self-care.[13,14]

However, prior research indicated that adolescents with epilepsy who had a low self-concept were related to health behavioral problems, less physical activity, increased risk-taking substance use, poor eating habits,[15] and poor adherence to medication.[16] These findings indicate that epilepsy in adolescents with low self-concept has a greater negative influence on their health and increases their risk of mental health problems. Healthcare professionals need to know about factors influencing self-concept that may enhance the sense of themselves among adolescents with epilepsy.

The self-concept in adolescents with chronic illness is related to diverse factors that can be classified as non-modifiable and modifiable factors. In non-modifiable factors, previous studies among adolescents with epilepsy have found that gender and age[8,17,18] were associated with self-concept. Modifiable factors include physical conditions; epilepsy severity, seizure type, seizure frequency, and a number of antiepileptic drugs (AEDs),[7,10,19] as well as environmental factors; family functioning,[7] and peer attachment[20,21] were associated with self-concept. However, some factors including age, seizure type, seizure frequency, the number of AEDs, and peer attachment, had inconsistent directions or were not strongly correlated with self-concept.[7,10,22] The present study selected gender, epilepsy severity, and family functioning for predicting the self-concept of adolescents with epilepsy. These selected factors were strongly correlated with self-concept in previous studies. They were also representative of each aspect of Bracken's model: gender in terms of non-modifiable factors, severity of epilepsy, and family functioning as modifiable factors.

Reviews of the literature on studies of the self-concept among adolescents with epilepsy undertaken in other countries with varied circumstances, social norms, and nature of care, which influence findings related to the perceived self-perception. Studies in Thailand have also rarely been found, and there is a limited number of studies on specific factors affecting self-concept in this group. The findings of this study can provide nurses with valuable information to assist adolescents with epilepsy in adjusting to alterations in self-concept and develop interventions based on the factors that affect self-concept to promote successful coping and positive health outcomes.

Objectives of the study

1. To examine the level of self-concept among adolescents with epilepsy.

2. To examine whether gender, epilepsy severity, and family functioning can predict self-concept of adolescents with epilepsy.

Conceptual framework

The conceptual framework of this study was based on Bracken's model[9] and a review of the literature in order to determine the factors that influence self-concept. The model explored self-concept and identified factors, such as basic human characteristics and human conditions. Age and gender are basic human characteristics that are non-modifiable factors. Human conditions as modifiable factors that increase "equal opportunity" of self-concept include physical conditions and environmental factors.[7,10,21]

Nevertheless, some variables showed contradictory trends or had minor effects on self-concept. The present study selected the factors that represent basic human characteristics and human conditions, including gender, severity of epilepsy, and family functioning.

Gender is a factor related to self-concept. In the present study, gender refers to the biological male or female gender of adolescents with epilepsy. The model describes the gender roles for both males and females. Males place less emphasis on physical appearance. They also typically have the favorable influence of sports activity on one's self-concept, given the availability of athletic participation.[9] Males have been reported to have the appearance of more self-confidence and independence of others' opinions.[23] In prior studies within the epilepsy group, it was found that male adolescents had a more positive self-concept than female adolescents.[17,18] However, another study reported the self-concept did not differ between adolescent boys and girls.[10]

Epilepsy severity is a level of epileptic condition and the requirement for treatment that manifests in adolescents with epilepsy.[24] The conceptual model indicated that the physical condition is related to individuals' self-perception.[9] In several studies in adolescents with high severity of epilepsy, these individuals typically experience significant physical limitations and more required treatments, which affect growth and development, as well as physical outcome and social activity – all of which have been found to decrease self-concept.[17,19,25,26]

Family functioning can be defined as one of the environmental factors in the human condition of the conceptual model. Family functioning is considered

as the representation of the relationships within the family and is one of the most influential factors in developing the human character such as the origin of a person's physical, psychological, and social evolution.[27,28] Previous studies have found that family functioning correlated with the self-concept of adolescents.[29,30] Adolescents with chronic illness who live with a healthy functioning family, who serve as the main source of care and play a reciprocal role in adolescents adjustment, have a better self-image and higher levels of self-concept.[28,29,31]

Research hypothesis

Gender, epilepsy severity, and family functioning are associated with the self-concept of adolescents with epilepsy.

Methods

A cross-sectional study was conducted to investigate the factors associated with the self-concept of adolescents with epilepsy in Thailand. The sample size was determined by the G*Power at a confidence interval of 95%, a power analysis of 0.90, and an effect size of 0.204, which were all based on three predictors from previous studies.[7,8,19] This study consisted of 82 adolescents with epilepsy who attended a pediatric neurology outpatient clinic at three tertiary medical centers, in Bangkok and Phitsanulok. The participants were between 12 to 18 years of age, diagnosed with epilepsy for at least 6 months, and had a standard score of more than 70 on the Peabody Picture Vocabulary Test-Fourth Edition to assess receptive language.

Instruments

1. The PPVT-4 was developed by Dunn & Dunn[32] to assess the receptive language of the subjects. Each item is a single word and consists of four pictures arranged on a page. The participant selects the picture that best illustrates the meaning of a stimulus word spoken by the researcher. The convergent validity with the Expressive Vocabulary Test, Second Edition (EVT-2) was .82, and the average test-retest correlation of .93. When the adolescents with epilepsy had a standard score above 70, they matched the inclusion criteria of this study.

2. The demographic questionnaire was composed of gender, age, level of education, duration of epilepsy, seizure frequency, number of AEDs, number of family members, family type, family income, and adequacy of family income.

3. The Epilepsy Severity Scale was used to assess severity of epilepsy. It was developed by Ekinci et al.[5] and Rodenburg, et al.[33], and translated into Thai by the researcher. It was computed by assigning scores from 0 to 3, based on seizure type, seizure frequency, and presence of mono/polytherapy. Seizure type was scored 1 in case of absences, 2 in case of focal seizure, and 3 in case of generalized tonic-clonic seizure. A score of 1 was given if adolescent had a seizure once a year, 2 if seizure happened monthly, and 3 if seizure happened weekly or daily. A score of 1 was assigned for the absence of a medication regimen, a score of 2 for monotherapy, and a score of 3 for polytherapy. A score of 3-5 indicated low epilepsy severity, and ≥ 6 indicated high epilepsy severity. In the present study, the content validity index (CVI) of this scale was .92 and Cronbach's alpha coefficient was .78.

4. Piers-Harris Self-Concept Scale, Third Edition (Piers-Harris3)[34] was used to assess self-concept, which includes an overall score and six domains: behavioral adjustment; freedom from anxiety; happiness and satisfaction; intellectual and school status; physical appearance and attributes; and social acceptance. It consists of 58-item, and each item response is 'yes' or 'no'. In this study, this scale was back-translated into Thai. Higher scores indicated a positive self-concept, and transformed from the raw score to T-score for interpretation level of self-concept. The construct validity, that is, correlations of the total score with other instruments, was .98.[34] The reliability, KR-21, was .87 in the present study.

5. General Functioning 12-item Subscale (GF12), was used to assess family functioning. It is the subscale of the McMaster Family Assessment Device, which was developed by Epstein et al.[27] This scale consists of 12-item, scoring is on a 4-point scale (from 1 for strongly agree to 4 for strongly disagree), and the score greater than 2.0 identified unhealthy family functioning.[35] The CVI of this scale was .82, and Cronbach's alpha coefficient was .83 in the present study.

Human subject protection

This research protocol was approved by The Ethics Review Committee for Research Involving Human Research Subjects, Faculty of Medicine Ramathibodi Hospital, Mahidol University (COA. MURA 2020/1549), Neurological Institute of Thailand (COA No. 003/2564), and Buddhachinaraj Hospital (COA No. 263/63). Before data collection

began, the researcher informed participants and their parents of the study's objectives and process and the right to withdraw from participation at any time without affecting their treatment or care. After they agreed to participate, the researcher requested them to sign the consent form. Both participants and parents signed an informed consent per IRB guidelines. They were given assurance that the data would be regarded as group information and kept confidential.

Data collection

The data were collected after receiving the Ethics Review Committee for Research Involving Human Research Subjects, Faculty of Medicine Ramathibodi Hospital, Mahidol University (COA. MURA 2020/1549), Neurological Institute of Thailand (COA No. 003/2564), and Buddhachinaraj Hospital (COA No. 263/63). All of the settings' permission, the participants who met the inclusion criteria and had agreed to participate were enrolled in the study. Then, the researcher explained how to complete the questionnaires. The participant completed the questionnaires for about 25 to 30 minutes while waiting for the physician. Data were collected between October 2020 and April 2021.

Statistical analysis

Demographic and epilepsy characteristic data were analyzed by using descriptive statistics. In subgroup analysis, mean scores were compared using t-tests or chi-square tests. Pearson's Product Moment Correlation was used to test for correlation between

independent variables and dependent variables. Before performing the stepwise multiple regression analysis, five assumptions, including the normal distribution of all variables, linearity, homoscedasticity, autocorrelations, and multicollinearity were tested.

Results

A total of 82 adolescents diagnosed with epilepsy, for at least six months, were recruited from the pediatric neurology outpatient clinic of the Neurological Institute of Thailand (n = 28), Faculty of Medicine, Ramathibodi Hospital (n=27), and Buddhachinaraj Hospital (n = 27). The average age was 14.38 (SD = 1.90), and gender distribution was equal, 50% of both males and females. They attended school, with the largest group (43.91%) enrolled in junior secondary education. More than half of them were living with nuclear families. The average number of family members was 4.57 (SD = 1.61). Forty percent had a monthly family income of more than 15,000 THB (435 USD) and 73.17% reported that their family income was adequate to meet their need.

The mean duration of epilepsy was 6.45 years (SD = 4.25) with a range of 0.5–16 years, 79.27% had focal seizures, and 69.51% had no seizure in the last year. Only 14.63% did not need AEDs, while 85.37% used AEDs. More than half or 52.44% of

participants met the criteria for high epilepsy severity. There were significant differences between epilepsy severity groups for seizure type (χ^2 = 7.46, p = .024), seizure frequency (χ^2 = 27.46, p < .001), the number of AEDs (χ^2 = 43.34, p < .001). In high epilepsy severity group, the use of polytherapy was 65.12% the most common AEDs used were valproate (n = 20), followed by levetiracetam (n = 17), carbamazepine (n = 11), topiramate (n = 8), phenytoin and lamotrigine (n =7), phenobarbital and clonazepam (n = 6), clobazam (n = 3), lacosamind (n = 2), and vigabatrin (n =1). On the other hand, in the low epilepsy severity group, phenytoin (n = 9) was the most commonly AED used, followed by valproate (n=7), carbamazepine (n = 5), levetiracetam (n = 4), topiramate (n = 2). No one used polytherapy in this group.

Considering the side effects of AEDs, three participants with low epilepsy severity reported side effects from AEDs that included hirsutism, irritability, and rash. On the other hand, among ten adolescents with high epilepsy severity, half of them reported frequent drowsiness, and others reported weight gain, tremors, anorexia, alopecia, dizziness, and gingival hypertrophy. The demographic and epilepsy characteristics between epilepsy severity groups are presented in Table 1.

Table 1 The demographic and epilepsy characteristics between epilepsy severity groups (N = 82)

Characteristics	Total		Low epilepsy severity		High epilepsy severity		Chi-square	p-value
	n	%	n	%	n	%		
Gender							2.39	1.220
Males	41	50	16	41.03	25	58.14		
Females	41	50	23	58.97	18	41.86		
Seizure type							7.46	.024
Absence	1	1.22	1	2.56	0	0		
Focal	65	79.27	35	89.74	30	69.77		
Generalized	16	19.15	3	7.70	13	30.23		
Seizure frequency							27.46	< .001
No seizure	57	69.51	38	97.44	19	44.19		
Once a month	15	18.29	1	2.56	14	32.56		
> One per month	10	12.20	0	0	10	23.25		
Number of AEDs							43.34	< .001
No AEDs	12	14.63	12	30.77	0	0		
Monotherapy	42	51.22	27	69.23	15	34.88		
Polytherapy	28	34.15	0	0	28	65.12		
Side effects of AEDs							3.71	.050
No side effect	39	47.56	36	92.31	33	76.74		
Occurring side effect	43	52.44	3	7.69	10	23.26		

Remark: AEDs = antiepileptic drugs

The mean score of the family functioning was 1.92 (SD = 0.48). They had healthy family functioning. The score did not differ when comparing family functioning between gender groups and epilepsy severity groups.

Table 2 shows the mean score of total self-concept was 38.77 (SD = 9.15), which was an average level (41T) of self-concept. Furthermore, most domains, including behavioral adjustment, freedom from anxiety, physical appearance and attributes, and social acceptance were at an average level. Two domains, including happiness and satisfaction, and intellectual and school status, showed a low level of self-concept. When comparing the self-concept between epilepsy severity groups, the scores of self-concept in total, behavioral adjustment domain, and social acceptance domain were lower in the high severity group. (t = 1.99, p = .050, t = 2.16, p = .034, t = 2.28, p = .026, respectively).

Table 2   Self-concept score (N = 82)

Piers-Harris3	Mean	SD	T score	Interpretive label
Total score	38.77	9.15	41	Average
Domain scores				
Behavioral adjustment	7.76	2.31	41	Average
Freedom from anxiety	4.41	2.11	45	Average
Happiness and satisfaction	7.40	1.86	38	Low
Intellectual and school status	6.77	2.65	37	Low
Physical appearance and attributes	4.09	1.55	44	Average
Social acceptance	7.40	2.72	42	Average

Table 3 shows that epilepsy severity and family functioning were co-predictors, accounting for 7% of the variance explained in overall self-concept. The most significant predictor of total scores of self-concept was epilepsy severity ($\beta = -.24$, $p = .029$), followed by family functioning ($\beta = -.22$, $p < .047$). However, gender did not predict self-concept.

Table 3   Stepwise multiple regression analysis of independent variables on total Piers-Harris3 (N = 82)

Predictors	b	SE	β	t	p-value
Constant (a)	48.86	4.22		11.59	< .001
Epilepsy Severity Scale	−4.35	1.96	−.24	−2.22	.029
GF12	−.34	.17	−.22	−2.02	.047

$R^2 = .09$; Adjust $R^2 = .07$; overall F = 4.10; p-value = .047

Discussion

This study's findings revealed that participants had an average level of self-concept in total and in the four domains: behavioral adjustment; freedom from anxiety; physical appearance and attributes; and social acceptance. This level is similar to that of the majority of the standard population of healthy population.[34] These results are consistent with Lee et al.[19], which found that self-concept among adolescents with epilepsy did not differ from the normative mean.

Ekinci et al.[7] also found that overall self-concept was not significantly different between adolescents with epilepsy and those without epilepsy. This result may be because the participants in the study had uncomplicated epilepsy; they had no other chronic diseases, cerebral palsy, mental retardation, or co-morbidity. They had a general appearance of a Thai teenager, similar to healthy peers, and could attend school regularly. Moreover, these participants had healthy family functioning as buffers to protect them from the potentially damaging effects of epilepsy.[36]

Considering that two domains of self-concept include happiness and satisfaction, and intellectual and school status were low, it is not surprising for adolescents with epilepsy to have a negative self-concept related to happiness and satisfaction. In the present study, 85.37% of participants used AEDs, and most participants had a high epilepsy severity level. This level could contribute to uncontrolled seizures, fear of seizures in public as a lack of self-control, and could result in restrictions from routine activities, causing them to feel unhappy and dissatisfied.[7,36]

In terms of the intellectual and school status domain of self-concept, the participants had epilepsy for an extended period of time; the average duration of illness was 6.45 years (SD = 4.25). The literature suggests that the early onset of seizure at young age may interfere with brain development and have a lasting effect on cognition through altering brain structure.[11] Moreover, participants in AED groups reported using phenobarbital, phenytoin, carbamazepine, topiramate, and valproate, all of which caused cognitive adverse effects and decrease in concentration.[37] In addition, participants reported that drowsiness was a frequently occurring side effect, and others reported that tremors and dizziness hindered their ability to learn.

The predictions of this present study partly support Bracken's conceptual framework that epilepsy severity and family functioning jointly predict 7% of self-concept among adolescents with epilepsy. In Bracken's model, epilepsy severity and family functioning can be classified as human conditions (modifiable factors) that increase the "equal opportunity"

of self-concept.[9] However, gender represents basic human characteristics. It was not able to influence the self-concept of adolescents with epilepsy.

Epilepsy severity could predict self-concept, with higher severity being associated with a poorer self-concept. This finding is similar to the study of Raty et al.,[18] which found that higher illness severity scores were correlated with a poorer self-concept and a lower sense of coherence in adolescents with epilepsy. Additionally, Chew et al.,[25] found that young people with high epilepsy severity had a more negative view of themselves, and illness severity also had a direct effect on young people's self-concept. It is not surprising that high epilepsy severity leads to lower self-concept. This relationship may stem from the fact that in high severity groups, individuals tend to have more physical and psychological problems. In the present study, the high severity groups presented with generalized seizures that affected both sides of the brain, more than half of them reported having seizures during the use of AEDs. Almost two-thirds used polytherapy and affected cognition; phenobarbital, carbamazepine, valproate, topiramate, and lamotrigine, as well as the frequent side effects of drowsiness occurring with AEDs. These factors contribute to a reduced sense of control and increased concern regarding limitations and restrictions, and ultimately resulting in lower self-concept in overall and some domains including behavioral adjustment and social acceptance, compared to individuals in the lower severity group.

Family functioning did predict overall self-concept. Higher GF12 scores reflected unhealthy family functioning. The results showed that unhealthy

family functioning is associated with a lower self−concept. This finding is similar to a previous study, by Ekinci et al.[7] that reported poorer self−concept in children and adolescents with epilepsy was associated with negative family functioning, which was a significant predictor of self−concept. Lee et al.[19] also found that family functioning remained a significant and unique predictor of self−concept. The explanation for this situation is that adolescents with healthy family functioning live with high levels of intimacy and emotional expression, the strength and warmth of the familial bonds, and the affective reciprocity between the members; they are satisfied with their family relationships and feel competent and valuable.[12] In Thai culture, the family is the most significant social unit; most Thai children live together with their parents, and the family members are in close relationships and bound with love and care for each other.[38] Moreover, for children with chronic illness, a family member, especially a mother or father, is often the primary caregiver to help them face the impact of disease, treatment, and reaction to illness. These served as protective factors against the tension of living with a chronic disease, thereby increasing their self−confidence and positive self−perception.

In the present study, gender was not found to be correlated with self−concept among adolescents with epilepsy, suggesting that gender does not have a significant impact on the self−concept of this population. The findings were consistent with the previous study carried out by Lee et al.,[10] which found that self−concept did not differ between adolescent boys and girls with epilepsy. The finding is different from Bracken's model; this may be due to the fact that in the present study, there was no significant difference by gender in epilepsy severity, and most of them had no seizures in the last year. The general appearance of teenagers with epilepsy does not alter their appearance and they have similar gender identity perceptions. Pinquart[39] revealed that they did not find significantly elevated levels of body dissatisfaction among epileptic teenagers. Furthermore, the present study findings reported no difference in family functioning between gender groups. They were supported by their primary caregivers who have close relationships and helped them face the impact of disease and treatment. On the other hand, these findings are not consistent with the findings study of Raty et al.[17] which observed that in both healthy control and epileptic adolescent groups, girls had a poorer self−concept than boys. Raty et al.[18] also found that female adolescents with epilepsy had a more negative self−concept than males; however, this study among females had a higher level of illness severity than males.

Implications of nursing practice

According to the research findings in this study, two subdomains of self−concept, the happiness and satisfaction domain and the intellectual and school status domain, were found to be at a low level. Therefore, nurses and healthcare professionals, as well as families and school teachers, should screen individuals' overall self−concept and each domain with a particular focus on happiness and satisfaction, as well as intellectual and school status, and develop interventions to promote the development of self−

concept among adolescents with epilepsy. In addition, nurses should identify the severity levels of epilepsy, observe and provide interventions to control the severity levels and improve clinical outcomes and self-perception. Family functioning is also an important factor in adolescents' self-concept. A positive family environment should be encouraged by nurses to maintain healthy family functioning that assists adolescents in dealing with their epilepsy conditions.

Recommendations for future research

The findings of the study revealed that two factors predicted the overall self-concept in teenagers with epilepsy. Further research is needed to study further other factors, such as the dimensions of family functioning and other significant environmental factors, as well as other conditions associated with epilepsy. Moreover, future research should investigate the self-concept of adolescents with other epilepsy co-morbid conditions. Additionally, future research should examine the effectiveness of an intervention program aimed at improving the self-perception of adolescents with epilepsy. In regards to the research designs, future studies should employ a larger sample size and a random sampling method in order to generalize the results more confidently. Moreover, a longitudinal design is recommended for assessing self-concept changes over time to represent the long-term outcome. Self-concept is a difficult and evolving phenomenon among teenagers; qualitative research could also contribute to the experience of teenagers with epilepsy.

Limitations of the study

One limitation of this study was its cross-sectional design, which restricted the ability to track variations in self-concept over time. All data were collected using self-administered assessments, which could lead to reporting bias. Participation could over- or underreport their perception of self-concept and family functioning.

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