

## Psychosocial Problems in Children with Idiopathic Epilepsy

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### Abstract

**Objectives:** Epilepsy is a common neurologic disorder in children. Idiopathic epilepsy syndromes are common in pediatric epilepsy. Developing behavioral and emotional problems is increasingly recognized in children with epilepsy. It is important to identify psychological problems as psychosocial factors are important in predicting behavioral problems, which will add to the impairment of quality of life in children with epilepsy. The Aim of this study is to assess psychosocial and behavioral problems in children with idiopathic epilepsy syndrome.

**Methods:** This study conducted on 44 children diagnosed with idiopathic epilepsy in King Abdulaziz Medical City in Riyadh, Saudi Arabia. A control group of 89 healthy children were included in the study. A structured questionnaire was established to assess the presence of psychological and behavioral problems in the cases under study.

**Results:** The children with idiopathic epilepsy syndrome have shown more behavioral and psychological problems than the healthy individuals. No differences were found between male and female in the case group.

**Conclusion:** Patients with idiopathic epilepsy syndrome experienced several problems such as mood disorders, depression, and anxiety.

**Keywords:** Idiopathic Epilepsy; Psychological Problems; Epilepsy Problems; Seizure Disorder; Behavioral Problems

### Introduction

One of the most common childhood neurologic disorders is epilepsy. Epilepsy affects 0.5 - 1% of children younger than 16 years [1]. Epilepsy is a chronic state identified by a predisposition towards recurrent seizures, it is frequently associated with neurological deficit [2,3]. Studies have shown that 70 - 76% of children who are diagnosed with epilepsy have some types of disability [4,5].

Idiopathic epilepsy syndrome represents 40% of childhood epilepsy disorders, however, it was stated that 70% of epilepsy in childhood consists of idiopathic epilepsy syndrome which also known as non-symptomatic epilepsy [6,7]. New syndromes of Idiopathic generalized epilepsies are increasingly recognized as a new category of disorders defined by strict clinical and electroencephalogram features [8].

Studies have shown that children with epilepsy were at a higher risk of developing behavioral and emotional problems [9]. Moreover, Studies have shown that behavioral problems are linked to epilepsy in children, where it was found in several studies that children with epilepsy had a consistently higher prevalence of emotional disturbances than those with other chronic diseases [10-14].

Causes of these behavioral problems may be attributed to the dysfunction of central nervous system, which causes both behavioral disorders and epilepsy. It was demonstrated in a study that dysfunction of the central nervous system may be a major factor in both the behavioral problems and seizure [10].

McDermott., *et al.* found that the behavioral disorders prevalence in children with epilepsy was higher comparing with healthy Children by 4.7 times. As a factor gender may have a role in these behavioral disorders [15]. Stores reported that boys with epilepsy had more school problems [16]. Moreover, Austin., *et al.* found that female gender act as a predictor for behavioral problems. Several studies have shown that the onset of seizures at an early age and higher seizure frequency is associated with increased behavioral problems [14,17-20].

Psychosocial factors also are important in predicting behavioral problems. Problems for children with seizures are related to parental attitudes and control, where it was reported that family stress was correlated with childhood behavior disturbance [10,14,18,21]. To our knowledge, previous studies focused on behavioral and psychosocial problems in children with epilepsy in general where the underlying etiology may have affected the results and did not discriminate idiopathic versus symptomatic epilepsy syndromes. So the aim of this study is to assess psychosocial and behavioral problems among children with idiopathic epilepsy.

**Materials and Methods**

**Study subjects and sittings**

This study conducted at King Abdullah Specialized Children Hospital in Riyadh, Saudi Arabia. The present study performed on 133 children who divided into two groups, the control group involved 89 healthy children selected randomly from patient files and the epileptic group included 44 children diagnosed with idiopathic epilepsy syndrome who presented to pediatric neurology clinic during the study period.

Ethical approval was granted by King Abdullah International Medical Research Center reference number: RYD-16-419812-198530.

**Inclusion criteria**

All pediatric patients aged 5 - 18 years old diagnosed with idiopathic epilepsy syndrome and using at least one antiepileptic drug.

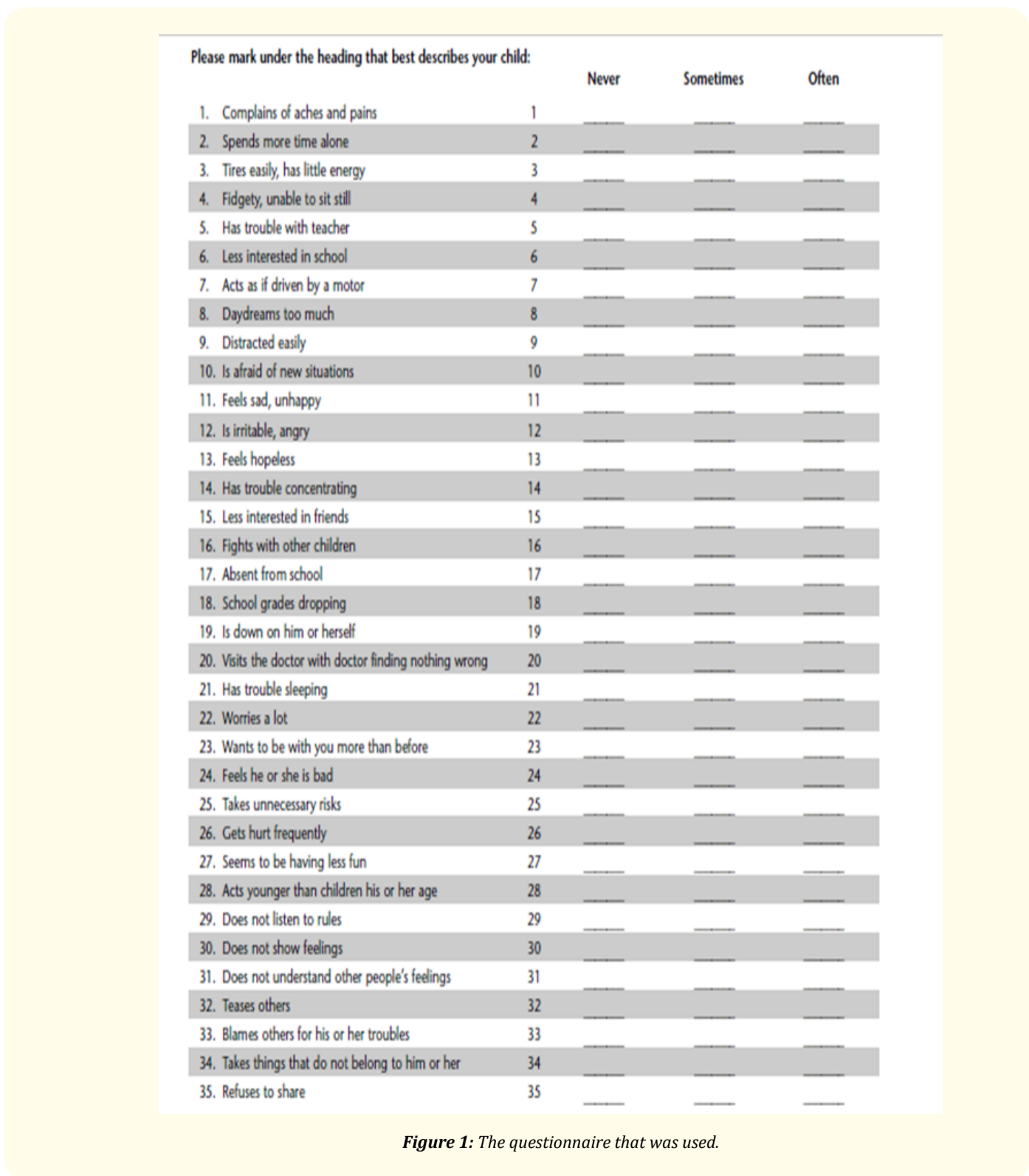
**Exclusion criteria**

Idiopathic epilepsy syndrome pediatric patients with abnormal neuroimaging mainly brain MRI.

EEG was performed in all cases in order to clarify the epilepsy syndrome. We excluded patients with other neurological diseases, and brain tumors. Informed consent was obtained from the parents of the participated children.

**Questionnaire**

This is a questionnaire based survey study using a structured pediatric symptom checklist of 35 questions (Figure 1) which was established by Jellinek., *et al.* as screening tool for psychological and behavioral problem in children with fair validity and reliability [22].



**Figure 1:** The questionnaire that was used.

**Statistical analysis** Statistical analysis was done using SPSS 16.0 statistical software package. Results presented as mean and standard deviation for quantitative data, frequencies and percent for qualitative data. Student t-test, Chi-square test and Fisher’s exact test were used as indicated. A probability value of less than or equal 0.05 was considered statistically significant. A total score was computed for 35 questionnaire items. Each item scored zero for never, 1 for sometimes, 2 for often.

**Results**

**Demographics**

The present study was performed on 89 healthy children (control group) and 44 epileptic children who are diagnosed with idiopathic epilepsy syndrome. The mean ages of case and control groups were 10.34 ± 3.22 and 9.65 ± 3.39 respectively; there was no significance difference between both groups regarding age (P-value < 0.257). Male gender was more dominant in both groups than female with male percentage of 68.2% and 73% in the case and control groups respectively.

**Questionnaire analysis, Control versus case**

In control group most of the participants did not suffer any of the investigated problems and they answered “never”, the percents of answers ranged from 75.3% to 100%, while few percents answered that the children sometimes suffer the investigated problems where the percent ranged from 0% to 18%, the least percent answered often and the percents ranged from 0% to 6.7%. In Case group, fewer percents were recorded for an answer “never”, the range of percents was 47.7% to 95.5%, while the range of percents for the answer “sometimes” was 0.1% to 36.4%, the range of percents of the answer “often” was 0% to 15.9%. By comparing the control group to case group, more percents were recorded for often answers in the case group, however, fewer percents were found for never and sometimes answers (Table 1-3). There was significant difference between the two groups in which 93% of the control have answered that they never feel aches or pain comparing with the case group which only 70% have answered with never (P < 0.001). In terms of feeling tired and having little energy there were significant difference between control and case group in which 98% of control have answered with never and only 72% have answered never from the control group (P < 0.001). There was significant difference between the two groups regarding fidgety and if the patient unable to sit still where 86% of the control group have answered with never and only 47% of the case group have answered never (P < 0.001). There was no significant difference when asking about absence from school between the two groups (0.228). Answering the question if the patient get distract easily there was a significant difference between the answers of the two groups, where 92% of the control group have answered with never and only 65% of the case group have answered with never (P < 0.001). In case if the patient gets irritable and/or angry there were significant difference between the two groups answers, where 85% of the control group have answered with never and only 56% in the case group have answered never (P < 0.001). In response to the question stating that if the child teases other there were significant difference between the two groups in which 92% of the control group have answered with never and only 70% of the case group have answered never (P < 0.001). If the child blames other for his/her troubles there were significant difference between the two groups answer to this questions in which 92% of the control group have answered never and only 70% of the case group have answered never (P < 0.001). There was no significant difference when asking if the child doesn’t show feelings between the control and the case groups (0.115). By comparing female and male in the case group, there was no significance difference in behaviors or problems they suffer (Table 4-6).

| Question                        | Cases          |                              | Control        |                              | P-value  |
|---------------------------------|----------------|------------------------------|----------------|------------------------------|----------|
|                                 | Never<br>N (%) | Sometimes and often<br>N (%) | Never<br>N (%) | Sometimes and often<br>N (%) |          |
| Complains of aches and pains    | 31 (70.5)      | 13 (29.5)                    | 83 (93.3)      | 6 (6.7)                      | 0.001*   |
| Spends more time alone          | 40 (90.9)      | 4 (9.1)                      | 77 (86.5)      | 12 (13.5)                    | 0.464    |
| Tires easily, has little energy | 32 (72.7)      | 12 (27.3)                    | 88 (98.9)      | 1 (1.1)                      | < 0.001* |
| Fidgety, unable to sit still    | 21 (47.7)      | 23 (52.3)                    | 77 (86.5)      | 12 (13.5)                    | < 0.001* |
| Has trouble with teacher        | 42 (95.5)      | 2 (4.5)                      | 86 (96.6)      | 3 (3.4)                      | > 0.99   |
| Less interested in school       | 35 (79.5)      | 9 (20.5)                     | 79 (88.8)      | 10 (11.2)                    | 0.153    |
| Acts as if driven by a motor    | 37 (84.1)      | 7 (15.9)                     | 89 (100.0)     | 0                            | 0.001*   |
| Daydreams too much              | 39 (88.6)      | 5 (11.4)                     | 83 (93.3)      | 6 (6.7)                      | 0.504    |
| Distracted easily               | 29 (65.9)      | 15 (34.1)                    | 82 (92.1)      | 7 (7.9)                      | < 0.001* |
| Is afraid of new situations     | 40 (90.9)      | 4 (9.1)                      | 87 (97.8)      | 2 (2.2)                      | 0.093    |
| Feels sad, unhappy              | 41 (93.2)      | 3 (4.5)                      | 89 (100.0)     | 0                            | 0.035*   |
| Is irritable, angry             | 25 (56.8)      | 19 (43.2)                    | 76 (85.4)      | 13 (14.6)                    | <0.001*  |

**Table 1:** Comparison between the percent of answers for question 1 to question 12 in the two groups.  
\*P-value: significant

| Question  | Cases       |                           | Control     |                           | P-value |
|---|-------------|---------------------------|-------------|---------------------------|---------|
|   | Never N (%) | Sometimes and often N (%) | Never N (%) | Sometimes and often N (%) |         |
| Feels hopeless                                      | 41 (93.2)   | 3 (6.8)                   | 89 (100.0)  | 0                         | 0.035*  |
| Has trouble concentrating                           | 36 (81.8)   | 8 (18.2)                  | 85 (95.5)   | 4 (4.5)                   | 0.020*  |
| Less interested in friends                          | 41 (93.2)   | 3 (6.8)                   | 88 (98.9)   | 1 (1.1)                   | 0.106   |
| Fights with other children                          | 29 (65.9)   | 15 (34.1)                 | 69 (77.5)   | 22 (22.5)                 | 0.152   |
| Absent from school                                  | 37 (84.1)   | 7 (15.9)                  | 82 (92.1)   | 7 (7.9)                   | 0.228   |
| School grades dropping                              | 36 (81.8)   | 8 (18.2)                  | 86 (96.6)   | 3 (3.4)                   | 0.006*  |
| Is down on him or herself                           | 39 (88.6)   | 5 (11.4)                  | 87 (97.8)   | 2 (2.2)                   | 0.04*   |
| Visits the doctor with doctor finding nothing wrong | 42 (95.5)   | 2 (4.5)                   | 89 (100.0)  | 0                         | 0.108   |
| Has trouble sleeping                                | 39 (88.6)   | 5 (11.4)                  | 89 (100.0)  | 0                         | 0.003*  |
| Worries a lot                                       | 38 (86.4)   | 6 (13.6)                  | 87 (97.8)   | 2 (2.2)                   | 0.016*  |
| Wants to be with you more than before               | 39 (88.6)   | 5 (11.4)                  | 89 (100.0)  | 0                         | 0.003*  |
| Feels he or she is bad                              | 43 (47.7)   | 1 (2.3)                   | 87 (97.8)   | 2 (2.2)                   | >0.99   |

Table 2: Comparison between the percent of answers for question 12 to question 24 in the two groups.

\*P-value: significant

| Question                                      | Cases       |                           | Control     |                           | P-value  |
|---|-------------|---------------------------|-------------|---------------------------|----------|
|   | Never N (%) | Sometimes and often N (%) | Never N (%) | Sometimes and often N (%) |          |
| Takes unnecessary risks                       | 41 (93.2)   | 3 (6.8)                   | 89 (100.0)  | 0                         | 0.035*   |
| Gets hurt frequently                          | 41 (93.2)   | 3 (6.8)                   | 86 (96.6)   | 3 (3.4)                   | 0.397    |
| Seems to be having less fun                   | 42 (95.5)   | 2 (4.5)                   | 87 (97.8)   | 2 (2.2)                   | 0.599    |
| Acts younger than children his or her age     | 39 (88.6)   | 5 (11.4)                  | 89 (100.0)  | 0                         | 0.003*   |
| Does not listen to rules                      | 32 (72.7)   | 12 (27.3)                 | 77 (86.5)   | 12 (13.5)                 | 0.151    |
| Does not show feelings                        | 39 (88.6)   | 5 (11.4)                  | 86 (96.6)   | 3 (3.4)                   | 0.115    |
| Does not understand other people's feelings   | 43 (97.7)   | 1 (2.3)                   | 88 (98.9)   | 1 (1.1)                   | 0.999    |
| Teases others                                 | 31 (70.5)   | 13 (29.5)                 | 82 (92.1)   | 7 (7.9)                   | 0.001*   |
| Blames others for his or her troubles         | 28 (63.6)   | 16 (36.4)                 | 85 (95.5)   | 4 (4.5)                   | < 0.001* |
| Takes things that do not belong to him or her | 37 (84.1)   | 5 (15.9)                  | 72 (80.9)   | 17 (19.1)                 | 0.65     |
| Refuses to share                              | 38 (85.4)   | 6 (13.5)                  | 67 (75.3)   | 22 (24.7)                 | 0.140    |

Table 3: Comparison between the percent of answers for question 25 to question 35 in the two groups.

\*P-value: significant

| Question                        | Female      |                           | Male        |                           | P-value |
|---------------------------------|-------------|---------------------------|-------------|---------------------------|---------|
|                                 | Never N (%) | Sometimes and often N (%) | Never N (%) | Sometimes and often N (%) |         |
| Complains of aches and pains    | 10 (71.4)   | 4 (28.6)                  | 21 (90.0)   | 9 (30.0)                  | 0.99    |
| Spends more time alone          | 12 (90.9)   | 2 (14.3)                  | 28 (93.3)   | 2 (6.7)                   | 0.581   |
| Tires easily, has little energy | 10 (71.4)   | 4 (28.6)                  | 22 (73.3)   | 8 (26.7)                  | 0.99    |
| Fidgety, unable to sit still    | 8 (57.1)    | 6 (42.9)                  | 13 (43.3)   | 17 (56.7)                 | 0.393   |
| Has trouble with teacher        | 14 (100.0)  | 0                         | 28 (93.3)   | 2 (6.7)                   | >0.99   |
| Less interested in school       | 10 (71.4)   | 4 (28.6)                  | 25 (83.3)   | 5 (16.7)                  | 0.434   |
| Acts as if driven by a motor    | 11 (78.6)   | 3 (21.4)                  | 26 (86.7)   | 4 (13.3)                  | 0.662   |
| Daydreams too much              | 12 (85.7)   | 2 (13.4)                  | 27 (90.0)   | 3 (10.0)                  | 0.677   |
| Distracted easily               | 9 (64.3)    | 5 (35.7)                  | 20 (66.7)   | 10 (33.3)                 | 0.99    |
| Is afraid of new situations     | 13 (92.9)   | 1 (7.1)                   | 27 (90.0)   | 3 (10.0)                  | 0.99    |
| Feels sad, unhappy              | 13 (92.9)   | 1 (7.1)                   | 28 (93.3)   | 2 (5.7)                   | 0.99    |
| Is irritable, angry             | 8 (57.1)    | 6 (42.9)                  | 17 (56.7)   | 13 (43.3)                 | 0.967   |

Table 4: Comparison between the percents of answers for question 1 to question 12 regarding gender.

| Question  | Female      |                           | Male        |                           | P-value |
|---|-------------|---------------------------|-------------|---------------------------|---------|
|   | Never N (%) | Sometimes and often N (%) | Never N (%) | Sometimes and often N (%) |         |
| Feels hopeless                                      | 14 (100.0)  | 0                         | 37 (90.0)   | 3 (10.0)                  | 0.540   |
| Has trouble concentrating                           | 9 (64.3)    | 5 (35.7)                  | 37 (90.0)   | 3 (10.0)                  | 0.087   |
| Less interested in friends                          | 13 (92.9)   | 1 (7.1)                   | 28 (93.3)   | 2 (6.7)                   | 0.99    |
| Fights with other children                          | 10 (71.4)   | 4 (28.6)                  | 19 (63.3)   | 11 (36.7)                 | 0.738   |
| Absent from school                                  | 12 (85.7)   | 2 (14.3)                  | 25 (83.3)   | 5 (16.7)                  | 0.999   |
| School grades dropping                              | 10 (71.4)   | 4 (28.6)                  | 26 (86.7)   | 4 (13.3)                  | 0.999   |
| Is down on him or herself                           | 13 (92.9)   | 1 (7.1)                   | 26 (86.7)   | 4 (13.3)                  | 0.999   |
| Visits the doctor with doctor finding nothing wrong | 14 (100.0)  | 0                         | 28 (93.3)   | 2 (6.7)                   | 0.999   |
| Has trouble sleeping                                | 13 (92.9)   | 1 (7.1)                   | 26 (86.7)   | 4 (13.3)                  | 0.999   |
| Worries a lot                                       | 12 (85.7)   | 2 (14.3)                  | 26 (86.7)   | 4 (13.3)                  | 0.999   |
| Wants to be with you more than before               | 13 (92.9)   | 1 (7.1)                   | 26 (86.7)   | 4 (13.3)                  | 0.999   |
| Feels he or she is bad                              | 13 (92.9)   | 1 (7.1)                   | 30 (100.0)  | 0                         | 0.318   |

Table 5: Comparison between the percents of answers for question 13 to question 24 regarding gender.

| Question                                      | Female      |                           | Male        |                           | P-value |
|---|-------------|---------------------------|-------------|---------------------------|---------|
|   | Never N (%) | Sometimes and often N (%) | Never N (%) | Sometimes and often N (%) |         |
| Takes unnecessary risks                       | 14 (100.0)  | 0                         | 27 (90.0)   | 3 (10.0)                  | 0.540   |
| Gets hurt frequently                          | 13 (92.9)   | 1 (7.1)                   | 28 (93.3)   | 2 (6.7)                   | 0.99    |
| Seems to be having less fun                   | 13 (92.9)   | 1 (7.1)                   | 29 (96.7)   | 1 (3.3)                   | 0.540   |
| Acts younger than children his or her age     | 13 (92.9)   | 1 (7.1)                   | 26 (86.7)   | 4 (13.3)                  | 0.99    |
| Does not listen to rules                      | 9 (64.3)    | 5 (35.7)                  | 23 (76.7)   | 7 (23.3)                  | 0.475   |
| Does not show feelings                        | 12 (85.7)   | 2 (14.3)                  | 27 (90.0)   | 3 (10.0)                  | 0.647   |
| Does not understand other people's feelings   | 14 (100.0)  | 0                         | 29 (96.7)   | 1 (3.3)                   | 0.99    |
| Teases others                                 | 9 (64.3)    | 5 (35.7)                  | 22 (73.3)   | 8 (26.7)                  | 0.724   |
| Blames others for his or her troubles         | 10 (71.4)   | 4 (28.6)                  | 18 (60.0)   | 12 (40.0)                 | 0.521   |
| Takes things that do not belong to him or her | 10 (71.4)   | 4 (28.6)                  | 27 (90.0)   | 3 (10.0)                  | 0.184   |
| Refuses to share                              | 12 (85.7)   | 2 (14.3)                  | 26 (86.7)   | 4 (13.3)                  | 0.999   |

Table 6: Comparison between the percents of answers for question 25 to question 35 regarding gender.

### Discussion

In the present study, we investigated the problems that children with idiopathic epilepsy suffer by using a questionnaire of 35 questions that covered several problems. It was reported that children with epilepsy experience poor academic degrees when compared to children without epilepsy [16,23,24]. Also, it was found that scores of academic achievements for children with epilepsy were lower than that of control [25]. This is in agreement with the present study, where most of the control children did not have a drop in their school degrees while more of case group had dropped in their academic degrees (P-value = 0.006). This may attribute to being distracted easily and having trouble in concentration, where the children with epilepsy experienced easily distraction and had trouble in concentration than the healthy group; P-value < 0.001, P-value = 0.02 for distraction and trouble in concentration respectively. The previous two factors may effect on studying and then affect the academic degrees. Rutter, *et al.* [26] estimated the prevalence of behavioral problems psychiatric disorder to be 24% and 28.6% respectively in children with uncomplicated epilepsy. Comorbidities of epilepsy in children include headache and sleep problems which belong to neurological comorbidities, while psychological comorbidities include hyperactivity, psychological and familial problems as well as mood disorders such as anxiety and depression [27]. It was reported that sleep troubles are significantly experienced by children with epilepsy [28]. Two previous studies [29,30] revealed that there were severe persistent sleep problems with higher rate in children with epilepsy, especially un-refreshing sleep, sleeplessness and daytime lethargy. Several studies [31,32] showed that parents of children with idiopathic epilepsy reported more common sleep problems. A study based on parental questionnaire showed that children with epilepsy had higher rate of sleep problems than normal ones [33]. Another study [34] revealed that children with idiopathic epilepsy sleep alteration patterns and problems such as night walking, daytime drowsiness and alteration sleeping habits. In the present study, the case group of idiopathic epilepsy complained more ache, pains and trouble in sleep than the control group; P = 0.001, P = 0.003 for complaining pain and sleep troubles respectively. However, having daydreams wasn't significantly differed between patients and control groups (P-value = 0.5). It was found that headaches usually start in the same year or after the diagnosis of epilepsy and occur mostly in children with idiopathic epilepsy [35]. In children with epilepsy, psychiatric comorbidities including hyperactivity, depressive and anxiety disorders are common [27]. It was reported that hyper activity disorder was very common psychiatric problem that associated with pediatric epilepsy [36]. In the current study, more children of the case group were unable to sit still and

they acted as they were driven by a motor, this reflects the hyperactivity they experienced than that of the control, where significances were found between the two groups regarding the previous factor. It was reported in previous studies that hyperactivity disorder was significantly higher in children with epilepsy [37], and more frequent than in general children [38]. Mood disorders were found to be in 12-26% of children with epilepsy [39] and the most common psychiatric disorders among children with epilepsy are depressive and anxiety disorders [40]. In the current study, mood disorders including being sad, irritable and angry were found to be more prevalent in the children with idiopathic epilepsy than the healthy ones, where significances were found between the two groups regarding the previous factors. Also, the children in the case group suffered depression and anxiety, which represented in being hopeless, down and worrying a lot. By comparing the case group to control group there were significances in depression and anxiety where these two problems were more prevalent in the case group. In one study [37] it was found that depression prevalence between children with epilepsy ranged from 26% to 33% with a significant difference between case and healthy group, also anxiety was more common among case group than healthy group and there was a significant difference between the two groups. Another study [41] demonstrated that anxiety, social phobia and behavioral disorders were significantly higher in patient children than healthy ones. In the present study, psychological and familial problems represented in taking risks, teasing and blaming others, the desire of children to be with their parents more than before, acting younger than their age. The previous problems were experienced more in the case group than in control group. Stores [16] reported that more school problems were related to boys with epilepsy, whereas Austin, *et al.* [14] found that female predicted behavioral problems. There was a study [42] found that a sex effect with more depression in adolescent girls with epilepsy, however in the present study there was no significant differences in any problem between male and female with idiopathic epilepsy. Females and males of the case group in the present study experienced the same problem with the same degree. In this study we couldn't compare our findings with more previous findings, as there were limitations in the number of studies presented about this problem, also there was differences in the design of our studies and previous studies which made it difficult to compare more findings. Further studies are very recommended to focus on this subject, especially to compare findings between female and male children.

## Conclusion

Children with idiopathic epilepsy are more likely to suffer psychological and behavioral problems than healthy children, which may add to the impairment of quality of life. They tend to have more prevalent problems with distraction, mood disorders, depression, anxiety and sleep problems. We found that these problems existed in males and females with the same degree.

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