

Impact of Educational Sessions for Epileptic Children Mothers on Their knowledge, Adherence to Antiepileptic Drugs and Seizures Severity among their Children

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Abstract:

Background: Epilepsy is a chronic medical condition, which requires long term management. Adherence to antiepileptic drugs (AEDs) is crucial for preventing the risk of recurrent seizures.

Aim of this study is to examine the impact of educational Sessions on maternal knowledge, adherence to antiepileptic drugs and seizure severity among their epileptic children.

Methods: A quasi experimental design (pre, post three month and follow up after six month) was conducted on 100 mothers with their epileptic children who willing to participate at inpatient unit and outpatient clinic of neurology department at Mansoura University Children's hospital. Three tools were used to collect the required data; structured interview questionnaire, medication adherence scale and seizure severity scale, then educational sessions was developed according to mothers needs.

Results: More than half of the studied mothers (59%) have poor knowledge and only (3%) of them have good knowledge. As regard adherence to antiepileptic drugs about three quarters of mothers (73%) are non-adherent. Also seventy two (72%) of children has moderate severity of epilepsy, (15%) has sever level and only (13%) has mild level of epilepsy severity before intervention, but after three and six month of intervention 57% & 44% of mothers had good knowledge, the majority of them 95% & 98% respectively become adherent to drugs administration and the severity level of seizure among children were decreased. Also (91%) of mothers reported that forgetness is the major causes of non- adherence to antiepileptic drug administration.

Conclusion: An improvement in mean score of mothers' knowledge, their adherence to antiepileptic drugs and seizure severity occurred among their children after three and six month of intervention than before.

Recommendation: Educational efforts and reinforcement must be continuous to meet the needs of the mothers and their children during various stages of the disease.

Keywords: Adherence, Antiepileptic drugs, Maternal knowledge, Seizure severity, Children, Educational sessions

I. Introduction

Epilepsy is a group of chronic brain conditions associated with abnormal electrical disturbance in one or more areas of the brain, which characterized by recurrent epileptic seizures originating in the brain (Hockenberry & Wilson, 2013). Epilepsy is the second common disease among chronic nervous diseases which affects approximately over 50 million patients worldwide (de Boer et al., 2008), with a prevalence rate ranging from 16 to 51 per 100,000 population in the developed countries and 35-111 per 100,000 population in the developing countries (Banerjee, Filippi and Allen-Hauser, 2009).

Antiepileptic drugs (AED) are known to be the major treatment for most of the affected children depending on several diagnostic factors such as the type of epilepsy, the frequency and severity of the seizures, as well as age and other health conditions (CDC, 2014). Issues that commonly hamper the success of drug therapy include drug resistance, poor adherence, drug-drug interactions and cost of medication (Kwan, Schachter and Brodie, 2011). In developing countries, the prevalence of poor adherence to AED therapy has been reported in up to 80% of epileptic children (WHO, 2003).

Adherence is generally defined as the extent to which patients' treatment-related behaviors such as taking medication, following a diet, modifying habits, or attending clinics that correspond to health professionals' advice (Gabr and Shams, 2015). For pediatric patients with epilepsy adherence to medication is crucial in preventing or minimizing seizures and their cumulative impact on everyday life. Medication adherence can be sufficiently defined as the taking of prescribed medication at the correct times, in the correct dosage, remembering to take doses, and continuing to take the medication for the duration prescribed (Malik, Shabbir, Saeed and Malik, 2014). In epilepsy non-adherence leads to lack of control over seizures, recurrence, increased absenteeism from school, possibly injury to oneself and consequently poor quality of life (Shams and Barakat, 2010).

Non-adherence to medication is widespread and considers one of the common problems that were addressed by physicians since many pediatric patients do not follow their physicians' plan. This problem may lead to many implications concerning medicine use especially among children (Qoul et al., 2015). Several researchers indicated that (30%-70%) of parents have children with chronic illnesses including epilepsy had poor adherence because of extended treatment duration, multiple medications, and periods of symptomatic remission. The effects of non-adherence among epileptic children can be serious that manifested in increased morbidity and mortality of the disease, reduced cost-effectiveness of medical care from unused medications, increased clinic and emergency room visits and hospital stays (Carbone et al., 2013).

The medication management of pediatric patients with epilepsy largely depends on the knowledge and attitudes of their parents particularly caregivers. Prior evidence showed that parents have inadequate knowledge regarding disease and pharmacotherapy of their children with epilepsy. Lack of knowledge and inappropriate beliefs are the major obstacles to successful epilepsy management (Shaju, Vinayan and Abraham 2014). Quality of life will be significantly affected by non adherence to AEDs due to the occurrence of frequent breakthrough seizures that increased hospital admissions. It may also lead to serious consequences like status epilepticus and sudden unexpected death (Monir, El-Alameey and Eltahlawy, 2013).

Education is the cornerstone to encourage a healthy attitude toward the disease and drug adherence through continuous communication between health professionals and parents of children with epilepsy regarding nature of disease, its characteristics, medications used, benefits of AEDs, dosage adjustments, potential drug interactions, adverse effects and needs for adherence to therapy is essential (Frank-Briggs and Alikor, 2011). Epileptic children adherence to medication regimens is important in the management of epilepsy. Failure to follow prescribed drug regimes will reduce the benefit that could be gained from the medication leading to uncontrolled epilepsy (Faught, et al., 2009). The mothers should plan the administration of the medications at convenient times to avoid disruptions of family routines, should understand the danger of skipping doses or omit them even if their children are free of seizures most of the time. Mothers should be aware that if their children have an illness, they are at increased risk of seizures and should contact their health professional if their children miss medications during the illness. The mothers' knowledge of potential side-effects of AEDs is important and must be encouraged to report their observations to their health-care provider (Mbuba, 2011).

Justification of the problem:

The promotion of medication adherence is considered as an integral component of nursing care practice and good healthcare. Poor adherence to antiepileptic drug (AED) therapy can lead to various undesirable complications. An approach which focuses on the control of seizure attack and reduce its severity will have limited success without medication adherence. This study aims to examine the impact of educational Sessions on maternal knowledge, adherence to antiepileptic drugs and seizure severity among their epileptic children.

Research Hypothesis:

- Maternal Knowledge and adherence to antiepileptic drugs will be better after the educational intervention.
- The severity of epilepsy among children will be decreased after the educational intervention

Subjects and method:

Design: A quasi experimental design (pre, post three month and follow up after six month) was used in this study

Setting: study was conducted at inpatient unit and outpatient clinic of neurology department at Mansoura University Children's hospital.

Subject: Convenience samples of 100 mothers having children suffer from epilepsy who were willing to participate in the study and fulfill the inclusion criteria:

- (1) children diagnosis of epilepsy and initiation of antiepileptic drug therapy with at least one drug for 12 weeks .
- (2) children from 2 to 14 years of age.
- (3) absence of developmental disorders and chronic illnesses requiring daily medication .

Tools of data collection:

Three tools were used to collect the required data:

I – **Structured interview questionnaire:** developed by the researcher after reviewing the related literatures, it composed of the following parts:

A- Basic data of the mother and their epileptic children which includes: mothers' age, level of education, occupation, residence and family history of epilepsy. Also, data about children age, sex, epilepsy disease duration, its types and types of AED were included.

III. Results

Table (1): The characteristics of the studied mothers and their epileptic children

Characteristics	Items	No	%
*** Mother's Characteristics			
Age of mothers (years)	20 –	49	49.0
	35 –	43	43.0
	50 +	8	8.0
Mean ± SD		35.74± 8.12	
Residence	Rural	73	73.0
	Urban	27	27.0
Social status	Married	72	72.0
	Widow	21	21.0
	Divorced	7	7.0
Education	Illiterate	16	16.0
	Read & write	44	44.0
	Secondary	16	16.0
	University	23	23.0
	Post university	1	1.0
Occupation	Working	14	14.0
	Not working	86	86.0
Family history	Yes	19	19.0
	No	81	81.0
*** Child's Characteristics			
Child age (years)	1 –	38	38.0
	5 –	50	50.0
	10 – 15	12	12.0
Mean ± SD		5.56 ± 3.36	
Gender	Males	59	59.0
	Females	41	41.0
Duration of illness (months)	12 –	65	65.0
	60 –	30	30.0
	120 – 156	5	5.0
	Mean ± SD	46.40	± 29.98
Type of epilepsy	General	44	44.0
	Local / Focal	21	21.0
	More than one type	35	35.0
Types of antiepileptic drugs used	Mono	46	46.0
	Multiple	54	54.0

It is clear from table (1) that the ages of about half (49.0%) of studied mothers were between 20 to less than 35 years and only 8.0% of them their age were 50 years and more with the mean age of 35.74 ± 8.12 years. Also two third of mothers 73% were from rural areas and 72% of them were married at time of the study. As regard mother's education nearly half of them (44%) were read and write, 23% had university graduation and 16% of them were illiterate and have secondary school. Also the majority (86.0%) of studied mothers was not working and 81% of them have no family history of the disease. Concerning children's characteristics half of them 50% their age were from 5 to less than 10 years and 38% of them were from one to less than five years with the mean age of 5.56 ± 3.36 years. As regard disease duration about two third of them have from 12 to less than 60 months with the mean duration of 46.40 ± 29.98 months. Forty four percent of children have general types of epilepsy, 35% have more than one type and only 21% of them have local / focal types of epilepsy. Also more than half (54%) of children used multiple types of antiepileptic drugs.

Table (2): Maternal knowledge, their adherence to antiepileptic drug and severity of epilepsy among their children before intervention

Items	Categories	No	%
Maternal knowledge	Good	3	3.0
	Fair	38	38.0
	Poor	59	59.0
Mean ± SD of knowledge score		8.40±3.54	
Adherence level	Adherent	27	27.0
	Not adherent	73	73.0
Mean ± SD of adherent score		3.08±1.81	
Severity of epilepsy	Mild	13	13.0
	Moderate	72	72.0
	Severe	15	15.0
Mean ± SD of severity score		18.69 ± 5.29	

The above table (2) shows that more than half of the studied mothers (59%) have poor knowledge and only (3%) of them have good knowledge with a mean score of 8.40 ± 3.54 marks before intervention. As regard adherence to antiepileptic drugs about three quarters of mothers (73%) are non-adherent with a mean adherence score 3.08 ± 1.81 . Also seventy two (72%) of children has moderate severity of epilepsy, (15%) has sever level and only (13%) has mild level of epilepsy severity before intervention with a mean severity score of 18.69 ± 5.29 .

Figure (1): Causes of non adherence of mothers to antiepileptic drugs.

This figure shows that the majority of studied mothers (91.8%) reported that forgetness is the major causes of non- adherence to antiepileptic drug administration, then complicated system of drug therapy (45.2%), then drug expenses (37%) and difficulty swallowing of drugs in (35.6%) of cases respectively.

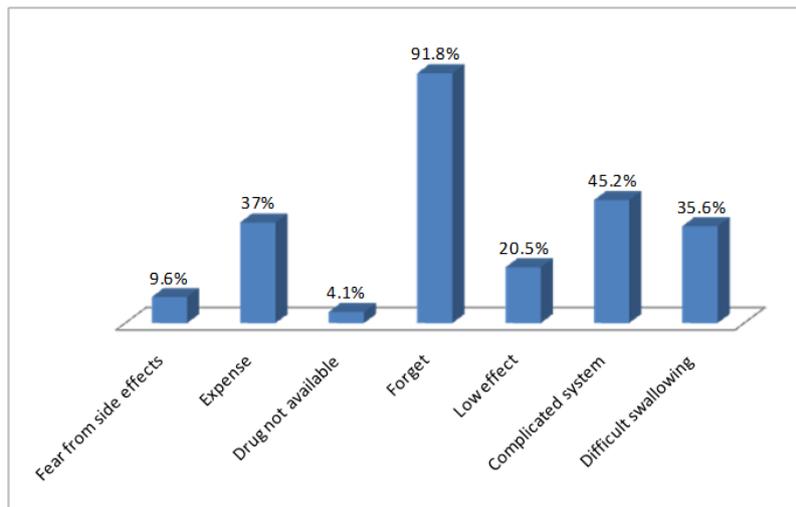


Figure (2) Comparison of knowledge level of studied mothers before and after three and six month of intervention:

This figure shows an improvement in mothers knowledge about antiepileptic drug adherence after three month of intervention than before in the form of 57% good, 33% fair and only 10% poor knowledge. After six month of intervention the mother's level of knowledge become 44% good, 38% fair and 18% poor knowledge.

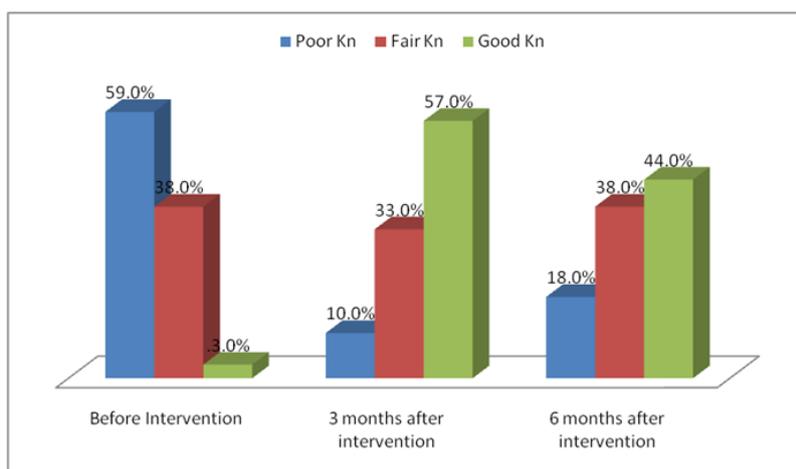


Figure (3): Comparison of adherence level to antiepileptic drugs before and after intervention.

It is clear from this figure that the majority of studied mothers (95%) become adherent to antiepileptic drugs after three month of intervention than before and this adherence rate continuo to increase to 98% after six month of intervention.

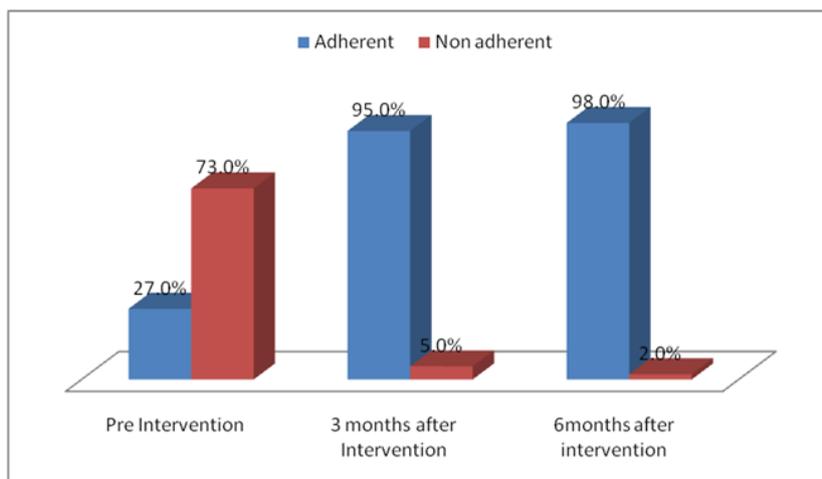


Figure (4): Comparison of the severity of epilepsy among children before and after intervention.

This figure presents level of seizure severity among epileptic children of studied mothers that shows an improvement in seizure severity level after three month of intervention in the form of 63% mild, 36% moderate and none sever compared to before intervention. While after six month of intervention only 2% of epileptic children had sever epileptic attack, 27% moderate and 71% mild level of severity.

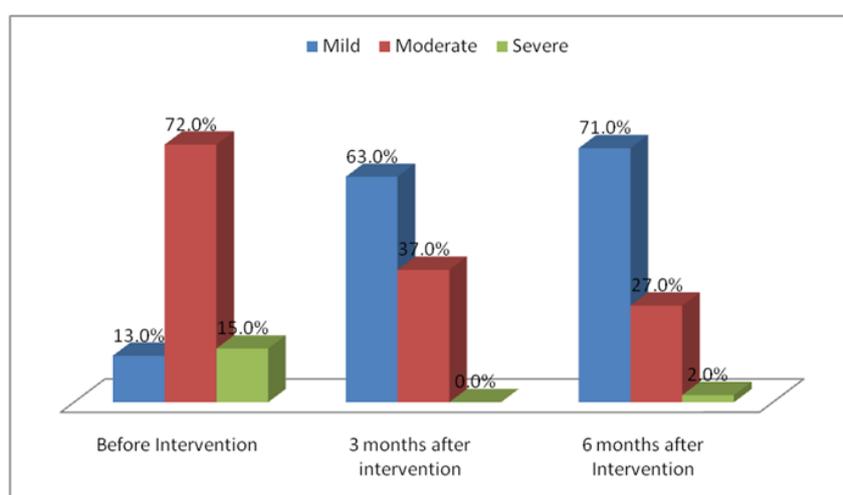


Table (3): Changes in the average scores of mothers' knowledge, their adherence to antiepileptic drugs and severity of children epilepsy after intervention

	Pre-Intervention	After 3 months	After 6 months
Knowledge score			
Range	3.0 – 16.0	7.0 – 20.0	7.0 – 19.0
Mean ± SD	8.04 ± 3.54	14.39 ± 3.91	13.33 ± 3.46
Significance test	Pre Vs 3 month t=29.543,P0.000	Pre Vs 6 month t=24.823,P0.000	3 mon Vs 6 mon t=4.515,P0.000
Adherent score			
Range	0.0 – 6.0	0.0 – 3.0	0.0 – 3.0
Mean ± SD	3.08 ± 1.81	1.29 ± 0.95	1.06 ± 0.86
Significance test	Pre Vs 3 month t=14.418,P0.000	Pre Vs 6 month t=12.099,P0.000	3 mon Vs 6 mon t=2.781,P0.006
Severity score			
Range	10.0 - 31	8.0 – 26.0	10.0 – 27.0
Mean ± SD	18.04 ± 5.29	14.79 ± 4.38	14.09 ± 4.47
Significance test	Pre Vs 3 month t=17.880,P0.000	Pre Vs 6 month t=14.445,P0.000	3 mon Vs 6 mon t=2.890,P0.005

Table (3) shows significant improvement in mean score of mothers' knowledge, their adherence to antiepileptic drugs and seizure severity occurred among their children after three and six month of intervention. With statistical significant difference between mean score of knowledge, adherence and severity of seizure before and after three month, before and after six month and between three and six month of intervention .

Table (4): Correlation between maternal adherence to antiepileptic drugs and their knowledge and severity of epilepsy among their children before and after intervention

Items	Adherence					
	Before Intervention		3 months after Intervention		6 months after Intervention	
	r	p	r	p	r	p
Maternal knowledge	0.168	0.095	0.316	0.001	0.301	0.001
Severity of epilepsy	-0.196	0.051	-0.229	0.002	-0.406	0.000

Table (4): shows correlation between maternal adherence to antiepileptic drugs and their knowledge and severity of epilepsy among their children. There was no statistical significant correlation between mothers' adherence score to antiepileptic drugs and maternal knowledge before intervention ($r=0.168$, $p=0.095$) and after three and six months of intervention, there was significant positive moderate correlation $r=0.316$, $p=0.001$ and $r=0.301$, $p=0.001$, respectively. Also, there was no statistical significant correlation between mothers' adherence score to antiepileptic drugs and seizure severity before intervention ($r=-0.196$, $p=0.051$). And there was statistical significant negative mild and moderate correlation between mothers' adherence score to antiepileptic drugs and seizure severity scores after 3 months and 6 months of intervention where ($r=-0.229$, $P=0.002$, and $r=-0.406$, $P=0.000$, respectively).

IV. Discussion

Adherence to the prescribed antiepileptic medication plan is crucial in pediatric patient with epilepsy to control seizure, which in turn compromises the quality of life (**Gabr and Shams 2015**). The present study clarifies that more than half of the studied mothers have poor knowledge and the minority of them have good knowledge about the disease and antiepileptic drugs before intervention regardless of their age, education or duration of their children illness (**table 2**). This finding may be attributed to the scientific terminology connected to epilepsy and antiepileptic drugs used. In addition, mothers' get used to the illness because of the chronic nature of the disorder so they do not ask or search about their children's illness. They were concerned about the seizures and their effect on various aspects of the lives of children, as well as long term side effects of AEDs. Also, this finding may reflect the insignificant role played by nurses as health educators or counselors in stressing the importance of adherence to the drug regimen, proper use, storage, potential side effects and interactions of drugs. This finding is congruent with **Badawy (2015)** who found poor maternal total knowledge score about epilepsy. But after three and six month of intervention there was an improvement in mothers' knowledge than before (**figure 2 & table 4**). **Shaju, Vinayan and Abraham (2014)** found on their study a gap of knowledge concerned with medications and therapy of epilepsy. Although, the parents of children with epilepsy were knowledgeable regarding the nature of epilepsy, its characteristics, causes, and prognosis, they were less aware about the nature of treatment, its objectives, use of drugs, adherence to the drug regimen, and duration of treatment. Also, many parents were worried about the effects of long term administration of drugs and the chance of drug dependence.

Another study by **Shah et al., (2011)** demonstrated lack of mothers' awareness about the proper usage of drugs, storage of medicine and their expiry dates. Also, a study made by **Behrouzian and Neamatpour, (2010)** indicated that mothers' information needs are not being met and indicated that their need for information remained high, so they continue to have questions about anti-epilepsy drugs and wanting more information about how to keep their children safe during a seizure. Although the results of the present study shows poor knowledge of mothers about epilepsy, AEDs and adherence regimen before intervention, this results contradicted with (**Frank-Briggs and Alikor, 2011**) who stated that parents of children with epilepsy of 8 to 17 years of age who knew about epilepsy were found to be more aware about antiepileptic drugs used and their side effects.

Adherence to medication is regarded as a major challenge in developing countries as a result of illiteracy, ignorance, and low income (**Mbuba, 2011**). The present study indicated that about three quarters of mothers were non-adherent to AEDs administration before intervention (**table 2**). This may because of their poor level of knowledge about their children medication in addition to their negative attitude towards their children diseases that connected with social stigma. But after three months of implementing educational sessions the majority of mothers become adherent to antiepileptic drug administration and the percentage increased after six month of intervention with statistical significant difference between before and after intervention ($p<0.05$) (**figure3 & table 3**). This improvement may results from the effect of educational Sessions in stressing the importance of adherence to the antiepileptic drug regimen and changing the negative attitude towards prescribed medication. These results come in agreement with **Gabr and Shams (2015)** who reported that The prevalence of self-reported poor adherence to AED therapy among the study subjects is higher.

The present study illustrated that, the common causes of non-adherence to antiepileptic drug regimen before intervention from mothers were forgetfulness then complicated system of treatment (**figure 1**). This result is agreed with several studies as **Qoul et al., (2015)** who investigated the top reasons for non-adherence to AED medications was Parents' forgetfulness to give medications to their children in 52.2% of cases. **Nakanwagi, (2015)**, who also found that forgetfulness was the primary cause of non-adherence by 69.6% of mothers. And **Wael et al., (2015)** who found that forgetfulness is the most common cause of non-adherence among a group of adolescent patients. As well as, **Tang et al., (2013)** indicated that forgetfulness by 54.2% is the main reason for non-adherence. While the results of the present study contradicted with **Shaju, Vinayan and Abraham (2014)** who stated that the primary reason for non-adherence (85.36%) was fear of side effects, (27.64%) of parents found it difficult due to polypharmacy, other reasons reported were increased frequency of dosing in (18.6%), cost of medications in (17.89%) and prolonged duration of therapy in (13.82%) of parents and only (8.13%) & (9.76%) of them ranked patient-related factors like forgetfulness and travel respectively as other reasons for non-adherence to antiepileptic drug therapy.

Regarding seizure severity score about three quarters of studied children had moderate severity of epilepsy and the minority of them had mild level of severity before intervention (**table 2**). This may be due to most of mothers were non-adherent to antiepileptic drug administration. But after the intervention there was statistical significant improvement after three months and continued after six months of intervention compared to before (**figure 4 & table 3**). The improvement may be due to increasing mothers' knowledge about the disease and antiepileptic drugs as most of epileptic children's mothers are not well informed, have significant misconceptions and negative attitudes towards antiepileptic medication. In addition, increased their adherence to antiepileptic medication which in turn affects seizure control and severity, also mothers realized the benefits of adherence as time passed because they learn from the intervention given and their personal experience. These findings were in agreement with **Modi et al., (2008)** who mentioned that compliance to prescribed medication plan leads to good seizure control and vice versa.

Concerning correlation between maternal adherence to antiepileptic drugs and their knowledge and severity of seizure among their children, the results of the present study revealed that there was no correlation between maternal adherence to antiepileptic drugs and their knowledge before intervention, but after three and six months of intervention a positive significant correlation was found (**table 4**). This may be because educational intervention removes false beliefs associated with social stigmatization from the disease. They got more information about treatment regimen and facilities, as well as the importance of correct adherence to treatment plan. These findings were in agreement with **Shaju, Vinayan and Abraham (2014)** who illustrated that improving the understanding about epilepsy and its management along with the overall medical care may ultimately enhance adherence, which will help to improve the therapeutic outcomes and overall quality of life in children with epilepsy. However, medication adherence in epilepsy is mainly related to the knowledge regarding the importance of regular drug intake.

Also, the present results clarified negative significant correlation between maternal adherence to antiepileptic drugs and seizure severity scores after three and six months of intervention (**Table 4**). This may be due to mothers' effort to adhere and give drugs on time to their children. Nearly similar findings were obtained from the study of **Solomon and McHale (2012) & Farahat et al., (2010)** who reported a low frequency of daily fits with drug compliance on their study sample. The current finding contradicted with **Mansy et al. (2012)** who found statistical significant positive correlation between seizure severity score and quality of life immediately and 3 months after educational program due to the unpredictability of seizure, the probable associated events like incontinence, injury or even suffocation and death.

V. Conclusion

An improvement in mean score of mothers' knowledge, their adherence to antiepileptic drugs and decrease in seizure severity scores among their epileptic children after three and six months of educational intervention than before.

VI. Recommendation

- Educational efforts and reinforcement must be continuous to meet the needs of the mothers and their children during various stages of the disease.
- Assessment of medication adherence among epileptic patients should be a routine part of the management process.

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