

Effect of Nursing Intervention program on Mothers' Knowledge, Practice and Attitudes toward Management of their Children with Epilepsy and Intellectual disability

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Abstract

Background: High levels of knowledge, and practice among mothers could support the needs of their children with epilepsy and intellectual disability. **The aim of this study** was to assess the effect of nursing intervention program on improving mothers' knowledge, practice, and attitudes toward management of their children with epilepsy and intellectual disability. **A quasi-experimental design** was applied in current study. **A purposive sample** composed of 71 mothers was recruited from three intellectual disability schools in Sharkia Governorate. Three tools were used: **Tool (I):** Mother's knowledge about their children with epilepsy and intellectual disability. **Tool (II):** Mother's practice observation checklist about their children with epilepsy and intellectual disability. **Tool (III):** Mother's attitudes scale about their children with epilepsy and intellectual disability scale. **Results:** The majority of the mothers surveyed were married. Additionally, statistically significant increases in the mother's knowledge, practice, and attitudes were observed between pre- and post-sessions, with the total knowledge satisfied increasing from 2.8 % pre- to 100 % post-intervention and follow-up. The total positive attitudes increased from 56.3% in pre intervention, to 100% in post intervention and at follow up. Highly significant difference between scores of before fit, during fit, emergency, and after fit at pre, post- and follow-up at $p < 0.001$. **Conclusion:** Current study revealed that the intervention efficiently improved mother's knowledge, attitude, and practice of epilepsy. Therefore, it is **recommended** that mothers should be equipped with all the necessary knowledge regarding children with epilepsy and intellectual disability either through a vast media campaign or by qualified health professionals.

Key words: Epilepsy, Mothers, Intellectual disability, Knowledge, Practice, Attitudes.

Introduction:

Epilepsy is a global public health problem that involves today more than 70 million people worldwide and over 85% of global disease burden presents in developing countries with at least 50% of cases begin at childhood or adolescence [1&2]. In Egypt [3] detailed that age-specific lifetime prevalence of epilepsy among children (< 18 years of age) was 9.7/1000. Similarly, Epilepsy is one of the most prevalent secondary disabilities among children with mental retardation in intellectual disability schools, and its frequency increases in direct proportion to the severity of the intellectual impairment. Around 50% of persons with substantial learning disabilities and between 10% and 20% of those with profound disabilities have had seizures at some point in their lives [4]. Similarly, epilepsy is one of the most prevalent neurological illnesses globally, with an estimated two million new cases occurring each year.

The effects of epilepsy on children and family incorporate several challenges such as complicated treatment regimens and psychosocial comorbidities. These obstacles have an impact on everyday living, place a significant financial and social strain on families, and are

associated with a low quality of life [5].

In 2017, the International League Against Epilepsy (ILAE) reported that seizures are categorized as: focal onset (arise in localized area in one cerebral hemisphere), generalized onset (traversing the brain's two hemispheres), unknown (It is impossible to identify the commencement of seizure activity.), or unclassified (insufficient data or difficulty to classify in other categories) [6].

The etiology of seizures is classified as genetic, infectious, structural, metabolic, immune, and an unknown group. Genetic are those believed to be caused by a known or presumed genetic abnormality. Structural/metabolic causes of epilepsy include acquired lesion, such as tumor, stroke, infections, and trauma, as well as congenital malformations. An infectious etiology refers to epilepsy that occurring due to specific infectious agent such as meningitis or encephalitis. Metabolic reasons relate to a well-defined metabolic abnormality that manifests or alters biochemically across the body, such as uremia or aminoacidopathies. Metabolic reasons relate to a well-defined metabolic abnormality that manifests or alters biochemically across the body, such as uremia or aminoacidopathies [7].

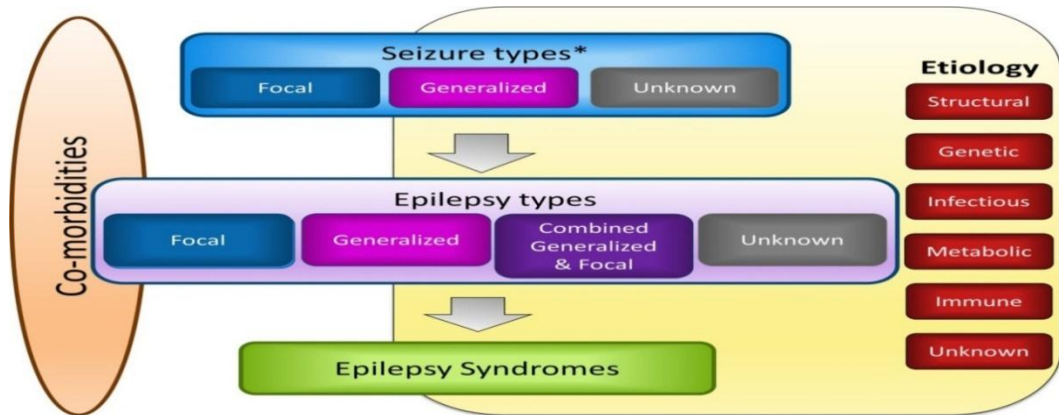


Fig (D): ILAE classification of the epilepsies

Source: [7]

ILAE classification of the epilepsies: Position paper of the ILAE Commission for Classification and Terminology Epilepsies; 58(4):512–521.

Insufficient epilepsy knowledge and practice; forgetting to take medicine; and insufficient problem resolution, communication, and self-management skills. Additionally, a lack of social support contributes to non-adherence [8]. Due to the high rate of non-adherence to treatment regimens among persons with epilepsy, it is critical to offer them with necessary supporting information about the illness and the need of sticking to medication, as well as frequent follow-up [9]

Seizures in certain children occur in reaction to stimuli. While triggers vary per children, understanding what causes someone's seizures implies that they may be able to avoid certain circumstances. The most common seizure triggers in children include emotional stress, sleep deprivation, fatigue, fever, infection, and illness [10]. Other precipitating factors include flashing or bright lights, missed medications, overstimulation (like staring at a computer screen or playing video games for too long), nutritional

deficiencies and fasting, dehydration, fever, certain medications, as well as hyperventilation (breathing too fast or too deeply) [11].

Establishing a diagnosis of epilepsy is critical. The process of diagnosis in children suspected of having epilepsy includes (1) determining whether epilepsy or seizure exists and not an alternative diagnosis, and (2) defining the underlying cause if possible [12]. Recently, [13] mentioned that a diagnosis of epilepsy or seizure is based on obtaining an accurate urseuphysical, neurological and developmental examination, laboratory studies, electroencephalogram and brain imaging (CT scan or MRI).

The basic tent of treatment for the children with seizures is to treat the whole children. The goals are to identify and correct the cause of the seizure, eliminate the seizure with a minimum side effect and the least amount of medication, and normalize the children's and family's lives [14]. Medical treatment of epilepsy focuses on controlling

seizures or reducing their frequency, the first choice of treatment is the pharmacological management (antiepileptic drug therapy)^[15].

Care of the children with a recurrent seizure disorder involves physical care and instruction regarding the importance of the drug adherence, the problems related to the emotional aspects of the disorder. Fears and misconceptions about the disease and its treatment are common and lead to anxiety among family members. The major role of the community health nurse (CHN) is directed toward educating the children and family in particular mother about epilepsy and helping them develop strategies to cope effectively with the psychological and sociologic problems related to it. In addition, the Community Health Nurse (CHN) plays an important role in providing the mothers with clear instructions about home care as seizure precaution measures, dosage and side effect of medications, possible precipitating factors, and the importance of maintaining as normal a lifestyle as possible^[16]. Additionally, preventing injury during seizures, administering appropriate medication and treatments to prevent or reduce seizures, and monitoring neurologic status closely are also CHN has important role^[17].

The aim of this study was to evaluate the effect of nursing intervention program on improving mothers' knowledge, practice, and attitudes toward management of their children with epilepsy and intellectual disability.

This was accomplished through the specific objectives:

1. Assess mothers' knowledge, practices and attitudes prior and after the nursing

intervention program toward management of their children with epilepsy and intellectual disability.

2. Plan, implement, and evaluate the effect of nursing intervention program on improving mothers' knowledge, practices, and attitudes toward management of their children with epilepsy and intellectual disability.

Hypotheses

- Mothers' knowledge, practices, and attitudes' scores toward management of their children with epilepsy will be improved after nursing intervention program.

Subjects and Methods

Study design

A quasi-experimental interventional design, with pre-, post-, evaluations applied.

Study setting

This study was conducted at three settings:

1. Intellectual education schools at Zagazig.
2. Intellectual education schools at Menia-El Amh.
3. Intellectual education schools at Dierb-Negm.

Subjects

A purposive sample was used in this study. The total intellectual education schools at Sharkia Governorate were 13 schools. Random sample was used for choosing the schools, intellectual education schools at Zagazig, Menia-El Amh, and Dierb-Negm were selected. All mothers and their children who met the inclusion criteria were invited to join in the present study.

Sample criteria

Only mothers with children with epilepsy and were willing to participate

in this research were included in this study.

Tools of data collection

Three tools were applied for collecting necessary data for achieving the study objectives, and there were a number of different questions as MCQ, and essay.

Tool (I): Mother's knowledge toward their children with epilepsy and intellectual disability. It consisted of three parts namely;

- **Part (A):** Mother's demographic characteristics, for collecting data pertaining to the mothers developed by the researchers as; age, residence, marital status, education, crowding index, income and source of information.
- **Part (B):** Children 's demographic characteristics, for collecting data pertaining to the children, developed by the researchers as gender, age at first fit, precipitating factor, degree of disability, number of medications, and regular medications. Additionally, children school characteristics as school phase, performance, Regular school attendance.
- **Part (C):** Mothers' knowledge questionnaire, to assess mothers' knowledge toward management of their children with epilepsy and intellectual disability. It was adapted by ^[18] as; definition, nature, causes, symptoms/signs, onset age of epilepsy, treating specialty, treatment duration, precipitating factors, diagnosis, prevention, precautions, treatment, petit mal fit and emergency.

Scoring system

For knowledge items, a correct answer received a score of one, while an erroneous response received a score of zero. For each area of expertise, the item

scores were added together, and the total divided by the number of items, resulting in a mean score for the section. These scores were then translated to percentile rankings. Knowledge was regarded good if the percent score was 50% or above, and unsatisfactory if the percent score was less than 50%.

- **Tool (II):** Mother's practice observation checklist to assess practices toward management of their children with epilepsy and intellectual disability. It was adapted from ^[19], which included 30 items, and covers 4 parts namely;

Part A: Covers practices during the focal seizure. It consists of three items, as do not blame the children, do not criticize the children, and record the number of times.

Part B: Covers practices during epilepsy fits. It consists of 13 items, as; stay calm, register time of the seizure, protect from injury and place something soft under the head, loosen anything tight around the neck, don't restrain the children, don't put anything in the mouth, gently roll the children onto his or her side, do not put onions, perfume in children's nose or mouth, avoid giving the children any food, drink or even medication during the seizure until he/she fully wakes up. Moreover, avoid spraying the children's face with water.

- **Part C:** It consists of 10 items, which covers practices when calling ambulance, such as; if it is a first-time seizure, the children is injured, or has diabetes, additionally, if a convulsive seizure lasts more than 5 minutes, if consciousness or regular breathing does not return after the seizure has ended, and if seizure repeats without full recovery between seizures.

- **Part D:** Covers practices to be followed

after epilepsy fits have been ended; Mother's should register time post the seizure, reassure and comfort the children if confusion follows the seizure.

Scoring system: Each observed "done" step received a score of one, while the "not done" steps received a score of zero. According to statistical analysis, a practice was regarded good if the percent score was 50% or above, and unsatisfactory if the percent score was less than 50%.

Tool (III): This measure was developed to ascertain mothers' attitudes toward children with epilepsy; it was modified from [20]. Mothers were asked to choose one of three responses to each statement: "Agree," "Disagree," or "Not sure." The statement of attitudes covering four domains as dealing with epileptic child, treatment, prognosis, and social stigma. Hence, the attitude scale was considered positive 60% or more and unsatisfactory if less than 60% based on statistical analysis.

Content validity and reliability of tools

Three specialists evaluated the data collected for tools. Two professors from the Department of Community Health Nursing, one assistant professor from the Department of Psychiatric Health Nursing at Zagazig University's Faculty of Nursing, and one professor with a specialty in brain and nerves from Zagazig University's Faculty of Medicine evaluated the tools' clarity, relevance, application, and comprehension. All changes to the tools that were proposed have been implemented. Cronbach's Alpha was used to determine the reliability of the suggested tools; the results were 0.759

for tool (I), 0.680 for tool (II), and 0.948 for tool (III) (III).

Field work

Data collection took six months, beginning of from October 2020 to end of March 2021. The study was carried out through 4-stages: assessment, planning, implementation, and evaluation.

Assessment phase

This phase involved data collection prior to intervention to assess the baseline. The researchers first introduced themselves and explained the purpose of the research briefly to the directors of all the intellectual education schools and to the mothers. The Director of each school appointed the Director of the school Training Unit to facilitate the administration of the questionnaires.

All the mothers were met, and verbal agreements were obtained for participation. The pretest knowledge, and attitude were distributed, and the same questionnaire was used after the sessions' implementation for post assessment (post-test). Data were analyzed initially to provide the basis for the design of the intervention sessions.

Planning phase

The researchers designed the intervention sessions' content. The learning booklet was prepared by the researchers and its content was validated and then distributed to mothers to be used as a guide for self-learning.

General objective: The general objective of the mothers' sessions was to raise their knowledge, practices and attitudes towards epilepsy.

Specific objectives: By the end of the sessions, the mothers should be able to:

- Define the meaning of epilepsy.
- Enumerate the causes of epilepsy.
- List the symptoms of partial and generalized epilepsy.
- Describe the common age, periods of treatment, and referral of doctors of epilepsy.
- Describe the triggering factors of epilepsy
- Discuss the diagnosis of epilepsy.
- Illustrate the prevention measures of epilepsy.
- Describe the treatment of epilepsy.
- Explain the precautions of epilepsy.
- Explain the practice and positive attitude during the focal seizure
- Apply the practice during and after epileptic fit correctly.
- Demonstrate when to call ambulance for generalized epilepsy.

Implementation phase

The intervention was implemented in the form of sessions; these were performed in the school library. The educational training methods were group discussions, role play, and demonstration. The sessions were supported using video, through laptop data show to facilitate and illustrate teaching. The total sessions of all intellectual schools was 11 sessions. The number of mothers in each session was 4-6 mothers. The objectives of the sessions were as follows:

At the beginning of the first session an orientation to the session such as; the purpose of the subject, contents, time and location. The objective of the second session was the explanation the basic knowledge regarding epilepsy as definition, nature, causes, symptoms/signs, triggering factors, and diagnosis, as well, the types of treatment and the precautions. The third session focused on applying the practice of the focal seizure epilepsy, as well as the

practice during and after epileptic fit correctly and finally, when to call ambulance for emergency generalized epilepsy and global summarization and revision of the aim of the session and termination module sessions.

The last session was to evaluate the effect of health educational sessions on improving mothers' knowledge practices and attitudes regarding epilepsy.

Evaluation phase

An evaluation of educational intervention for nursing was carried out immediately after the implementation of the sessions. A follow-up evaluation was carried out after three months through the application of the same tools of the pretest.

Pilot study

Before starting the main study, a pilot study was conducted on 7 mothers (10%), who were excluded from the main study.

Administrative and ethical considerations

Permission to carry out the study was granted by submission of official letters from the Faculty of Nursing to the responsible authorities of the study settings to obtain their permission for data collection. All ethical issues were taken into consideration during all phases of the study.

Statistical Design

The SPSS statistical software program version 20.0 was used to enter data and conduct statistical analysis. For qualitative variables, data were presented using frequencies and percentages; for quantitative variables, data were presented using means, standard deviations, and medians. Chi-square test was used to compare qualitative category variables. Where anticipated values in one or more cells in a 2x2 table were less than 5, the Fisher exact test was utilized instead. The

Spearman rank correlation coefficient was employed to analyze the correlations between quantitative and ranking variables. To discover independent determinants of knowledge, attitude, and practice scores.

Results

Table (1) shows distribution of mothers according to their demographic characteristics, 62.0% of mothers were in the age <40 years, while their mean age was 37.9 ± 8.1 . The study also examined the educational level of the mothers, it is noted that mothers with illiterate level dominated the study (46.5%), as well, rural residence (91.5%). As for marital status of the mothers 93.0% were married and 46.5% of them reported that their income was sufficient income.

Table (2) indicates the epileptic children demographic and disease characteristics. It reveals that 59.2% of the children were boys, the highest children's age in the category <12 (63.4%), and the mean of children age at first fit was 2.3 ± 2.7 . In addition, 34.1% of the epileptic children are having more than one of precipitating factors followed by fever (18.2%). Moreover, for 67.6% of the children, it was severe mental retardation disease. Furthermore, 25.5% of them use 4 drugs and for 53.1% they were regular medications.

Table (3) describes that 69.0% of the children were primary school phase and 67.6% of them were poor school performance. Moreover, 50.7% of children were regular school attendance.

Table (4) reveals that the highest mothers' source of information regarding epilepsy was physician (94.4%), followed by nurse, (9.9%), and media (4.2%).

Table (5) clarifies that there are significant increases in the score of all studied mothers' outcomes in the post-intervention than pre-intervention ($p < 0.001$). Additionally, the total knowledge satisfactory increased from 2.8% in pre intervention, to 100% in post intervention and follow up.

Table (6) describes mothers' attitudes toward their children with epilepsy and intellectual disability. There were highly statistically significant differences between mothers in relation to their attitude toward epilepsy whether dealing with children, treatment, and prognosis ($p < 0.001$). Additionally, the total attitudes positive increased from 56.3% in pre intervention, to 100% in post intervention and at follow up.

Table (7) shows that there was highly statistically significant differences in mothers' practices between scores of before fit, during fit, emergency, and after fit at pre, post and follow up at p value $< 0.001^*$. Furthermore, the total adequate practice increased from 4.2% in pre intervention, to 100% after intervention and decreased to 93% at follow-up. All the differences observed were statistically significant $p = 0.001$.

Table (8) portrays that there was a statistically significant difference between mothers' attitude at pre-intervention phase and their regular medications ($p < 0.05$).

Table (9) displays that correlation matrix of mothers' knowledge, attitude, and practice scores. There are statistically significance differences between attitude and knowledge (.842), practice and knowledge (.881), attitude and practice (.888). In a multivariate analysis.

A table (10) show that the statistically significant independent positive

predictors of the mothers’ knowledge scores related to epilepsy was their intervention. The model explains 0.66% of the variation in this score, whereas none of the other mother’s ‘characteristics had a significant influence on it.

In a multivariate analysis, Table 11 demonstrates that the statistically significant independent positive predictors of the mothers’ attitude scores related to epilepsy were their intervention, mother’s age, income, and knowledge scores. The model explains 0.78% of the variation in this score,

whereas none of the other mother’s characteristics had a significant influence on it.

In a multivariate analysis, Table 12 shows that the statistically significant independent positive predictors of the mothers’ practice scores related to epilepsy were their girl children, knowledge score, and attitude score. The model explains 0.87% of the variation in this score, whereas none of the other mother’s characteristics had a significant influence on it.

Table 1: Demographic Characteristics of Mothers in the Study Sample (n=71)

Demographic characteristics	Frequency	Percent
Age:		
<40	44	62.0
40+	27	38.0
Range	20-57	
Mean±SD	37.9±8.1	
Median	37.0	
Residence:		
Urban	6	8.5
Rural	65	91.5
Marital status:		
Married	66	93.0
Widow	5	7.0
Education:		
Illiterate	33	46.5
Basic	6	8.5
Secondary	24	33.8
Intermediate	3	4.2
University	5	7.0
Crowding index:		
<2	21	29.6
2+	50	70.4
Income:		
Insufficient	38	53.5
Sufficient	33	46.5

Table 2: Epileptic Children Demographic and Disease Characteristics (n=71)

Demographic and disease characteristics	Frequency	Percent
Children gender:		
Boys	42	59.2
Girls	29	40.8
Children age:		
<12	45	63.4
12+	26	36.6
Children age at first fit:		
Range	0.0-14.0	
Mean±SD	2.3±2.7	
Median	1.0	
Precipitating factor:		
No	27	38.0
Yes	44	62.0
Factors (n=44):		
Punishment	1	2.3
Fever	8	18.2
Hunger	1	2.3
Anger	6	13.6
Fear	5	11.4
Irregular medication	1	2.3
Late night sleep	2	4.5
Fatigue	5	11.4
More than one	15	34.1
Degree of disability:		
Moderate	23	32.4
Severe	48	67.6
No. of medications;		
0	7	9.9
1	12	16.9
2	25	35.2
3	16	22.5
4+	11	25.5
Regular medications:		
No	30	46.9
Yes	34	53.1

Table 3: Characteristics of Children with Epilepsy and Intellectual Disability (n=71)

School Characteristics	Frequency	Percent
School phase:		
Primary	29	69.0
Preparatory/secondary	22	31.0
School performance:		
Poor	48	67.6
Good	23	32.4
Regular school attendance:		
No	35	49.3
Yes	36	50.7

Table 4: Mothers’ sources of information about epilepsy (n=71)

Sources of information:	Frequency	Percent
Physician	67	94.4
Nurse	7	9.9
Media	3	4.2

(@) Not mutually exclusive

Table 5: Mothers Knowledge of Epilepsy throughout Intervention Phases

Knowledge about epilepsy:	Time						X ² (p-value) Pre-post	X ² (p-value) Pre-FU
	Pre (n=71)		Post (n=71)		FU (n=71)			
	No.	%	No.	%	No.	%		
Definition	15	21.1	71	100.0	70	98.6	92.47 (<0.001*)	88.66 (<0.001*)
Nature	58	81.7	71	100.0	71	100.0	14.31 (<0.001*)	14.31 (<0.001*)
Causes	12	16.9	71	100.0	71	100.0	100.94 (<0.001*)	100.94 (<0.001*)
Symptoms/signs	34	47.9	71	100.0	71	100.0	50.04 (<0.001*)	50.04 (<0.001*)
Onset age	7	9.9	71	100.0	71	100.0	116.51 (<0.001*)	116.51 (<0.001*)
Treating specialty	33	46.5	71	100.0	71	100.0	51.88 (<0.001*)	51.88 (<0.001*)
Treatment duration	6	8.5	71	100.0	70	98.6	119.87 (<0.001*)	119.87 (<0.001*)
Precipitating factors	44	62.0	71	100.0	71	100.0	33.34 (<0.001*)	33.34 (<0.001*)
Diagnosis	20	28.2	71	100.0	71	100.0	79.58 (<0.001*)	79.58 (<0.001*)
Prevention	10	14.1	71	100.0	71	100.0	106.94 (<0.001*)	106.94 (<0.001*)
Precautions	13	18.3	71	100.0	70	98.6	98.05 (<0.001*)	94.21 (<0.001*)
Treatment	60	84.5	71	100.0	71	100.0	11.92 (0.001*)	11.92 (0.001*)
Seizures	7	9.9	71	100.0	71	100.0	116.51 (<0.001*)	116.51 (<0.001*)
Petit mal fit	5	7.0	71	100.0	71	100.0	123.32 (<0.001*)	123.32 (<0.001*)
Emergency	33	46.5	71	100.0	71	100.0	51.88 (<0.001*)	51.88 (<0.001*)
Total knowledge:								
Satisfactory	2	2.8	71	100.0	71	100.0	134.22	134.22
Unsatisfactory	69	97.2	0	0.0	0	0.0	<0.001*)	(<0.001*)

(*) Statistically significant at p<0.05

Table 6: Mothers Attitude towards Epilepsy throughout Intervention Phases

Positive (60%+) Attitude towards:	Time						X ² (p-value) Pre-post	X ² (p-value) Pre-FU
	Pre (n=71)		Post (n=71)		FU (n=71)			
	No.	%	No.	%	No.	%		
Dealing with epileptic child	42	59.2	71	100.0	71	100.0	36.44 (<0.001*)	36.44 (<0.001*)
Treatment	21	29.6	69	97.2	69	97.2	69.91 (<0.001*)	69.91 (<0.001*)
Prognosis	8	11.3	71	100.0	71	100.0	113.24 (<0.001*)	113.24 (<0.001*)
Social stigma	70	98.6	70	98.6	70	98.6	Fisher (1.00)	Fisher (1.00)
Total attitude:								
Positive	40	56.3	71	100.0	71	100.0	39.66	39.66
Negative	31	43.7	0	0.0	0	0.0	(<0.001*)	(<0.001*)

(*) Statistically significant at p<0.05

Table 7: Mothers' Practices in Caring with Children with Epilepsy and Intellectual Disability throughout Intervention Phases.

Practice Adequate (60%+)	Time						X ² (p-value) Pre-post	X ² (p-value) Pre-FU
	Pre (n=71)		Post (n=71)		FU (n=71)			
	No.	%	No.	%	No.	%		
Before fit	23	32.4	71	100.0	68	95.8	72.51 (<0.001*)	61.96 (<0.001*)
During fit	5	7.0	71	100.0	63	88.7	123.32 (<0.001*)	94.93 (<0.001*)
Emergency	6	8.5	71	100.0	69	97.2	119.87 (<0.001*)	112.16 (<0.001*)
After fit	13	18.3	70	98.6	67	94.4	94.21 (<0.001*)	83.48 (<0.001*)
Total practice:								
Adequate	3	4.2	71	100.0	66	93.0	130.49	11.89
Inadequate	68	95.8	0	0.0	5	7.0	(<0.001*)	(<0.001*)

(*) Statistically significant at p<0.05

Table 8: Relations between Mothers’ Attitude at Pre-intervention Phase and Their children characteristics

Items	Attitude				X ² test	p-value
	Positive		Negative			
	No.	%	No.	%		
Children gender:						
Boys	25	59.5	17	40.5		
Girls	15	51.7	14	48.3	0.42	0.51
Children age:						
<12	23	51.1	22	48.9		
12+	17	65.4	9	34.6	1.36	0.24
Precipitating factor:						
No	16	59.3	11	40.7		
Yes	24	54.5	20	45.5	0.15	0.70
School phase:						
Primary	26	53.1	23	46.9		
Preparatory/secondary	14	63.6	8	36.4	0.69	0.41
School performance:						
Poor	25	52.1	23	47.9		
Good	15	65.2	8	34.8	1.09	0.30
Regular medications:						
No	22	73.3	8	26.7		
Yes	13	38.2	21	61.8	7.92	0.005*
Regular school attendance:						
No	21	60.0	14	40.0		
Yes	19	52.8	17	47.2	0.38	0.54

(*) Statistically significant at p<0.05

Table 9: Correlation Matrix of Mothers’ Knowledge, Attitude, and Practice Scores

Scores	Spearman's rank correlation coefficient		
	Knowledge	Attitude	Practice
Knowledge	1.000		
Attitude	.842**	1.000	
Practice	.881**	.888**	1.000

(**) Statistically significant at p<0.01

Table 10: Best Fitting Multiple Linear Regression Model for the Knowledge Score

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	-1.80	3.82		-0.470	0.639	-9.33	5.74
Intervention	35.57	1.77	0.81	20.103	<0.001	32.08	39.06

r-square=0.66

Model ANOVA: F=404.13, p<0.001

Variables entered and excluded: age, education, residence, income, child age and sex

Table 11: Best fitting Multiple Linear Regression Model for the Attitude Score

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	63.11	2.58		24.426	<0.001	58.01	68.20
Intervention	1.72	0.81	0.12	2.121	0.035	0.12	3.32
Mother age	0.10	0.05	0.07	2.002	0.047	0.00	0.20
Income	1.42	0.79	0.06	1.794	0.074	-0.14	2.98
Knowledge score	0.26	0.02	0.78	14.252	<0.001	0.23	0.30

r-square=0.78

Model ANOVA: F=189.21, p<0.001

Variables entered and excluded: education, residence, child age and sex

Table 12: Best Fitting Multiple Linear Regression Model for the Practice Score

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	-30.77	9.10		-3.382	0.001	-48.71	-12.84
Girls children	3.15	1.43	0.06	2.204	0.029	0.33	5.96
Knowledge score	0.48	0.04	0.62	11.712	<0.001	0.40	0.56
Attitude score	0.77	0.12	0.33	6.314	<0.001	0.53	1.01

r-square=0.87

Model ANOVA: F=457.90, p<0.001

Variables entered and excluded: age, education, residence, income, child sex and onset age, intervention

Discussion

Epilepsy is a chronic condition that requires long term care and results in neuropsychological dysfunction, quality of life deterioration, and recurrent physical injury; also it leads to social stigma, low academic performance, decreased work opportunities, and shortened lifespan. Accurate information for epileptic children and their families especially mothers' education about the consequences of epilepsy, and skills development are essential components for helping them become better partners in children-centered care. The effects of epilepsy on a child and family incorporates several challenges as complicated treatment regimens and psychosocial comorbidities that influence daily life, put critical financial and social burden on families, and associated with poor quality of life [15].

The current study revealed that the highest age in the category group less than forty years, illiterate education, and insufficient income and epilepsy occur more in boys than girls. This might be due to the mortality associated with epilepsy in low-income countries. These results are in agreement with those of **Vaid et al., (2012)** [21] in **Ethiopia**, who said that persons with epilepsy were much more subject to be illiterate or to be able to read and write only, and far less likely to have finished secondary or higher education. Additionally, there was a link between epilepsy and employment as a laborer or traditional farmer. Similarly, study results done by **Kishk et al., (2019)** [22], in **Egypt**, which mentioned that females were more illiterate and unemployed compared to males.

In the present study, almost one of quarter of children uses more than 4 drugs and more than half of children were regular medications. It may be due to their inadequate awareness about their medications and the importance of adherence. Forgetfulness was the most common cause of non-adherence as reported by many studies [23,24&25].

For more than half of the studied children, the most common triggering factors of seizure were having more than one of precipitating factor. This might be due to the mothers and their children while dealing with seizure-precipitating factors is a partly neglected and ignored. Acknowledging and avoiding seizure

precipitants may improve seizure control in many children. This finding similar to that of **Elshiekh et al., (2021)** [26], in **Egypt**, who mentioned that more than one of triggering factors of seizure of the children as emotional stress (48%), medication incompliance (40%), sleep deprivation, fatigue and physical effort (30%), having cold, stimulant (sit in front of TV for long periods) and other least common factors, which account for 18. These results are almost similar to those of research done by **Dugassa et al., (2017)** [27] in **Shambu General Hospital, North West Ethiopia**, they found nearly the same triggers with different percentages as emotional stress (97.4%), sleep deprivation (78.1%), missing meal (29.8%), missing medication (21.9%), a menstruation cycle, heavy alcohol, cold weather, and chat (34.2%).

The source of information in the present study was physician or nurse showing its importance. This finding might be due to, the mothers follow up with the doctor to check on the development of the children every 6 months to prevent complications. The result of the present study is supported by **Kolahi et al., (2018)** [20] in neurology clinic of a pediatric hospital, who found that physicians and nurse were the leading sources of information about epilepsy. This finding contrasting with **Dargie et al., (2020)** [28], found that the most prominent source of knowledge was internet (59.8%). This difference may be due to difference in location and culture.

Concerning answering the research hypothesis which stated that mothers' knowledge, practices, and attitudes' scores toward children with epilepsy and intellectual disability will be improved after nursing intervention sessions, the findings of the present study revealed that minority of the mothers had satisfactory knowledge, and practices, and more than half of mothers were having positive attitudes in pre intervention. This might be due to that no such study was previously conducted on those mothers. Moreover, more than two thirds of mothers had illiterate level. The study revealed that the level of knowledge, attitudes, and practices towards epilepsy needs community educational program to fill the gaps. As well, level of education and income seem to be the two major contributing factors. The overall poor knowledge magnitude was in line with the study

conducted in **Ethiopia**, by **Henok and Lamaro (2017)** ^[29], which mentioned that majority of mothers were having unsatisfactory knowledge and practices. Similarly, study done by **Ibrahim and Shata (2017)** ^[30] in **Egypt**. They mentioned 80.5% of mothers got unsatisfactory knowledge. This result was in agreement with that of a study done by **Dargie et al., (2020)** ^[28], aimed to assess a public knowledge and attitude towards epilepsy and its associated factors in **Debre Berhan, North Shoa, Amhara Region, Ethiopia**. They found that 43.6% had poor knowledge about epilepsy, and 32.2% of the study participants reported seizure attacks didn't originate from the brain, caused by evil spirit (46.6%), and infection or injury can't cause a seizure disorder (52%). Similarly, 29.5% did not know about the presence of different types of seizure disorder, 34.1% thought there is no medical test for diagnosing seizure disorder. These results matched with those of **Kissani et al., (2020)** ^[31] in **Marrakesh, Morocco**, who mentioned that knowledge was very poor highlighted, the need for a more global intervention.

After implementation of the nursing intervention sessions, the findings of the present study revealed that highly statistically significant improvements in mothers' total knowledge, practices, and attitudes scores, about epilepsy were demonstrated after implementing the educational training program ($P < 0.01$), where the majority of the studied group had satisfactory knowledge scores following the intervention. As well, highly statistically significant differences were detected between scores of before fit, during fit, emergency, and after fit at pre, post and follow up at p value < 0.001 . This difference could be related to the nature and the effect of the program, its content; teaching methods and interactive media used to impart knowledge; telephone follow up calls to remind participants about the next session and discuss any concerns about the disease.

This study result was in agreement with that of a study conducted in **Abha City, Kingdom of Saudi Arabia** by **Asiri et al., (2018)** ^[32], which aimed to assess parent's knowledge and attitude and practice towards their children with epilepsy, they mentioned that most of **Saudi** parents in **Abha** showed that adequate practice pattern. This was consistent with other study in **KSA**, by

Obeid et al., (2012) ^[33], which aimed to identify the cause of epilepsy, and they found adequate practice and knowledge among mothers. These findings were supported by those of **Kolahi et al., (2018)** ^[20], which aimed to assess knowledge, attitudes, and practices among mothers of children with epilepsy and demonstrated good knowledge and practice scores. As well, these findings matched with those of **Giuliano et al., (2017)** ^[34], as they mentioned that of the 216 subjects involved in the program, only 133 (61.6%) subjects completed the questionnaires, a month after the educational program.

A significant improvement was recorded in knowledge, attitudes, and practices toward epilepsy, reflecting a reduction of stigma levels. These results matched with those of **Kausar et al., (2020)** ^[35], in **Pakistan**, who found that, the post-test results revealed a significant increase in mother's knowledge ($P = < 0.002$), and attitude ($P = < 0.04$). The same result disclosed by **Turan Gürhopur and Dalgıç (2018)** ^[36] in a study reported that, consistent and regular education through interactive teaching methods improves knowledge, self-efficacy and the quality of care for children with epilepsy.

Regarding the attitude towards epilepsy in the present study, more than half of mothers had a positive attitude towards epilepsy before intervention. However, after intervention all of mothers' at immediately post as well as follow up three months had adequate attitude. This study result is in line with those of several studies done in **Ethiopia** by **Henok & Lamaro (2017)** ^[29], **Uganda** by **Kiwanuka, & Anyango-Olyet (2018)** ^[37], and **Nigeria** by **Osakwe et al., (2018)** ^[38]. Additionally, ^[28] in **Ethiopia** found that 41.3% of the respondents had an unfavorable attitude towards epilepsy before intervention which improved after intervention. Also, **Asiri et al., (2018)** ^[32] showed that most of **Saudi** parents in **Abha** had adequate attitude. In accordance the study done in **Italy** showed good attitude toward dealing with epileptic children in good manner **Savarese et al., (2015)** ^[39].

Fortunately, the improvements on the knowledge, management of epilepsy among mothers, and attitudes in the next three months (follow up test) were still stable except practices have been reduced by a very small percentage, this might be due to lack of continued education

and reinforcement during the follow-up period regarding practices, additionally, because mothers tend to forget some of what they learned as long as time passes. So, this indicates the need to carry out a periodic nursing intervention about the disease at least every six months to guarantee that the mothers' practices are still good to deal with such children. This finding was matched with that of **Abusaad & El-Wehedy (2016)**^[40], who found a slight decrease in the level of knowledge after six months of the educational sessions.

In the present study, a multivariate analysis showed that, the statistically significant independent positive predictors of the mothers' practice scores related to epilepsy were their girl children, knowledge, and attitude score. As well, the statistically significant independent positive predictors of the mothers' attitude scores related to epilepsy were their intervention, mother age, income, and knowledge score. This might be related to that positive knowledge leads to improve practice and positive attitude. Generally, this study reflected that the educational training program had significant positive effect on epileptic mothers' performance. These findings matched with **Abusaad & El-Wehedy (2016)**^[40] who found that statistically significant independent positive predictors of the mothers' attitude scores related to epilepsy was their intervention.

Conclusion

Based on the present study results, one can conclude that slightly more than two thirds of children with epilepsy are having severe intellectual disability. Furthermore, more than almost three fifths of the children were boys. The highest mothers' source of information regarding epilepsy was physician. Moreover, the comprehensive educational training program for mothers with children with epilepsy and intellectual disability had a profound effect on improving their knowledge, practices, and attitudes about the disease. As well, highly scores of before fit, during fit, emergency, and after fit at pre, post and follow up tests at p value <0.001. In a multivariate analysis, a statistically significant independent positive predictor of the mothers' knowledge scores related to epilepsy was their intervention.

Recommendations

1. Educational sessions, an illustrated booklet and written leaflets about disease, treatment, strategies to improve knowledge, attitudes, practices and drug adherence, and self-management practices are mandatory.
2. Educational nursing intervention about epilepsy should be provided periodically and continually to all mothers in all intellectual education schools to equip them with the necessary knowledge and skills for proper management of children with epilepsy in the school.
3. Further study should be carried out on a larger scale for generalization of results.

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