

Effect of Simulation Training on Seizure Management and Anxiety level among Mothers of Children with Epilepsy

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Background: The use of simulation as a learning modality for children with epilepsy supporting caregivers to manage seizure has the potential to positively impact them to function better and helps caregivers to practice and manage stressful events in actual situation. **Purpose:** The purpose of the study was to evaluate the effect of simulation training on seizure management and anxiety level among mothers of children with epilepsy. **Research Design:** A quasi experimental design was used. **Setting:** It was conducted in Pediatric Medical Department, Pediatric outpatient clinic and the general lab in Pediatric Nursing Department, Faculty of Nursing, Menoufia University. **Sample:** Purposive sample of 60 mothers admitted with their children having epilepsy at the previously mentioned settings. **Instruments:** Three data collection instruments were used: Structured Interview Questionnaire sheet, Structured Observational Checklist to assess mothers' performance and Hamilton Anxiety Rating Scale (HAM-A). **Results:** the result of this study showed that mothers had higher level of knowledge (21.3±1.8 post intervention) Vs (4.5±1.2 pre intervention) and practices (satisfactory performance was found between 98.3% on post intervention compared to none on pre intervention) So, there were very highly statistically significant differences between mothers' anxiety level on post intervention compared to pre intervention. **Conclusion:** It was concluded that implementation of simulation training program improved mothers' knowledge and practices about epilepsy on post intervention than on pre intervention. Also, it contributed to lower the levels of anxiety between mothers on post intervention than pre intervention. **Recommendation:** Integrating simulation training into Pediatrics department is important to improve caregivers' knowledge and practice regarding their management of children having epilepsy

Key words: Anxiety, Children, Epilepsy, Seizure management, Simulation training.

Introduction

Epilepsy' is derived from the Greek word "Epilambanein" meaning is "to be seized" and "to be overwhelmed by surprise". The word Epilepsy is used both in verbal and written context for more than 4000 years. It is one of the most common pediatric neurological disorders that is characterized by two or more unprovoked seizures. Common causes include prenatal or perinatal injuries, congenital abnormalities or brain malformations, head injuries, stroke, neurological infections such as meningitis,

encephalitis and neurocysticercosis, and brain tumors. In some cases, there is an underlying genetic reason for the condition; about half of the cases, however, there is no identifiable cause (Chiu & Zeineh, 2022). About 50 million people worldwide have epilepsy. It is estimated that worldwide, 10.5 million children under the age of 15 year have active epilepsy. Also 125,000 new epilepsy cases occur yearly (Hamaad & Alseraty, 2019). Seizures are defined as a transient occurrence of signs and symptoms due

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to the abnormal, excessive or synchronous neuronal activity in the brain characterized by abrupt and involuntary skeletal muscles activity. The adjective “transient” in the definition, indicates a time frame with a clear onset and remission. Status epilepticus (SE) is a condition resulting either from the failure of the mechanisms responsible for seizure termination or from the initiation of a mechanism, which leads to abnormally, prolonged seizures (for a time period of 5 min or more). It is a condition, which can have long-term consequences (especially if its duration is more than 30 min) including neuronal death, neuronal injury, and alteration of neuronal network, depending on the type and duration of seizures. The principal risk factors for seizures in children are correlated with: positive family history, extreme temperature, mental disability, delayed discharge from NICU or premature birth, mother’s substance abuse and smoking in pregnancy doubles the danger of seizure incidence. Moreover in 30% of children during which the primary episode of seizures occurs, the probability of recurrent episodes is increased (Minard et al., 2019).

Research on children and adolescents with epilepsy has revealed a high incidence of psychiatric, psychological and behavioral difficulties. Psychopathology is more than four times more prevalent in these children than in children in the general population. Children with epilepsy are often overwhelmed by feelings of embarrassment, frustration, helplessness display resultant fearfulness, dependence and demanding behavior. Anxiety, depression and concomitant social withdrawal are highly prevalent in these children. Also Children with epilepsy/seizure disorder are more likely to have or develop mental health

and developmental comorbidities such as depression, anxiety, attention deficit hyperactivity disorder, learning disabilities, and developmental delay compared to children without epilepsy/seizure disorder. Moreover, children who suffer from epilepsy may develop learning problems. Some of these problems may arise from the seizure activity itself or from the drugs that the child may be taking (Laporta-Hoyos et al., 2022).

Most parents are extremely angry when their child is diagnosed with epilepsy; mainly because of the stigma associated with the condition. Parents are mostly the primary caregivers of children with epilepsy. Caring for a child with a chronic life-threatening illness such as epilepsy carries major physical and psycho-logical burdens on the parents. Those parents face a number of challenges including the stigma of disclosure of epilepsy, in addition to the lack of sound information about how to cope with the problem, and hence need psychosocial and emotional support. A systematic review estimated that up to 50% of mothers of children with epilepsy are at risk of depression. Parents of children with epilepsy may also be at an increased risk for symptoms of anxiety disorders. It is the most common mental health disorders. Women are significantly more likely than men to develop an anxiety disorder throughout their lifespan (Shahin & Hussein, 2019).

Simulation is an educational tool provides opportunities for safe, practice and clinical skills acquisition. It has demonstrated transfer of skills to actual clinical scenarios, which has led to improved care, health and clinical outcomes. The use of simulation as a learning modality for supporting caregivers to manage seizure has the potential to positively impact them to function better. Simulation helps

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caregivers to practice and managing stressful events in actual situation. There is a relationship between family-centered care and caregiver satisfaction, more efficient use of health services and caring for children with special needs (Kahraman et al., 2019). So simulation intervention is essential in helping the caregivers to cope with the situation and provide good caregiving through improving their knowledge, attitude, practice and decrease anxiety level.

Nurses play a critical role in promoting the best health outcomes for children with epilepsy by imparting information about the disease, teaching self-management skills, and discussing treatment options with children and their families'. The pediatric nurse caring for hospitalized epileptic children must be knowledgeable about the disease, its treatment, and Convulsion management. This knowledge will help the nurse to provide a safe environment for the child and keep Convulsion to a minimum so that recovery will not be delayed by unnecessary Convulsion injuries. Teaching needs regarding the disease and its management can also be identified and implemented by the nurse (Rashad et al., 2016). So this study aimed to evaluate effect of intervention based on simulation training on seizure management and anxiety level among mothers of Children with epilepsy.

Purpose

The purpose of this study is to assess the effect of simulation training on seizure management and anxiety level among mothers of Children with epilepsy.

Research Hypothesis:

1) Mothers who receive simulation training will have a higher level of knowledge about epilepsy and simulation on posttest than pretest.

2) Mothers who receive simulation training will have a higher level of seizure management on posttest than pretest.

3) Mothers who receive simulation training will have less anxiety level on posttest than pretest.

Methods

Research Design:

A quasi- experimental design (pre and posttest) was utilized for this study.

Research Setting:

This study was conducted in the three areas, the first and second for data collection in Pediatric Medical Department and Pediatric Outpatient Clinic at Menoufia University Hospital/Shibeen El Kom teaching hospital in Menoufia governorate, Egypt. The third one for nursing intervention was implemented in the General Lab in Pediatric Nursing Department in the faculty of nursing, Menoufia University.

Sampling:

Purposive sample of 60 mothers admitted with their having epilepsy children at previously mentioned settings and who agree to participate in the study and meet the criteria of sample selection will be included).

Instruments:-

Three instruments were utilized for data collection:

Instrument one: Structured Interviewing Questionnaire sheet:

It was adapted from Deepthi (2016) and modified by the researcher after reviewing literature. It consisted of four parts:

1) **Part one:** Social characteristics of studied mother. It included questions about age, marital status, level of education, job and training courses if taken.

2) **Part two:** Social characteristics of children. It included children's age, gender and diagnosis.

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- 3) **Part three:** Mothers' knowledge about epilepsy. It included 8 questions about definition, causes, types, manifestation, triggers, diagnosis, complications of epilepsy, when to contact emergency department, and 9 questions about management of epilepsy.
- 4) **Part four:** Mothers' knowledge about simulation. It included 5 items: definition, objectives, advantage, disadvantage of simulation and how simulation is done?

The Total Scoring System of mothers' Knowledge about epilepsy and simulation:

Level of knowledge	Score
Good knowledge	>75%
Average knowledge	50- 75%
Poor knowledge	<50%

Instrument two: Observational Checklist to Assess Mothers' Performance Before, During and after the Seizure: -

It was developed by the researcher after reviewing related literature to observe mothers' management practice of epilepsy. It was divided into three parts:

- 1) **Part one:** Immediate assessment on child's before seizure attack. It included preventing factors that triggers seizure and monitoring child behaviors.
- 2) **Part two:** Management of children during seizure attack. It included putting the child on side lying position, providing safe environment, elevating the side rails, loosening the child clothes, maintaining patent airway, removing excessive salivation by tissue paper or clean soft cloth, avoiding restraining the child,

avoiding anything per mouth as drinks and water, recording time of seizure, avoiding giving any medication per mouth and putting a tongue depressor or any clean tissue paper between child teeth.

- 3) **Part three:** Management of children after seizure attack. It included checking the child for any injury, putting the child in side lying position, maintaining comfortable environment free from any noise and providing psychological & reassurance for the child.

The Total Scoring System:

Satisfactory performance	>75%
Average performance	50-75%
Unsatisfactory performance	<50%

Instrument three: Hamilton Anxiety Rating Scale (HAM-A): -

It was developed by Hamilton Maier, Buller, Philipp and Heuser, (1988) tested the scale's reliability and validity in two samples of 97 anxious and 101 depressed individuals and concluded that the reliability and concurrent validity of the HAM-A and its subscale were sufficient and internal consistency was $Y\ \alpha=0.77$ to 0.92 . It was used to assess the severity of anxiety symptoms. It contained questions about 14 parameters, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Each item was rated on a 5-point scale, ranging from 0 (not present) to 4 (very severe).

Total scoring system for Hamilton anxiety rating scale :-

Mild anxiety	0-71
Moderate anxiety	72-142
Severe anxiety	143-213
Very Severe anxiety	214-284

Reliability of the tool:

The reliability of the study tool tested to determine the extent to which items in tool were related to each other by Cronbach's co-efficiency alpha for the questionnaire ($\alpha= 0.97$). Pearson correlation co-efficiency was done to test the internal consistency ($r=0.02-0.98$) for all items of the tool.

Validity

For validity assurance purposes, the three instruments were submitted to a jury of five specialists (two professors and one assistant professor in pediatric nursing field and two professors and another assistant professor in pediatric medicine field). The modification was done to ascertain its relevance and completeness.

Ethical considerations

- Ethical approval was obtained from the scientific committee of faculty of Nursing, Menoufia University.
- A verbal and written approval was obtained from the mothers of children who participated in the study after the researcher explanation about the purpose, nature, benefits of the study to them and their children's. And their right to withdraw from the study at any time.
- Mothers reassured about confidentiality of data and anonymity was respected.
- Confidentiality and anonymity of patients was assured through coding all data and putting all paper in a closed cabinet.
- Questionnaires were fulfilled by the researcher through personal interview.

Pilot study

It was carried out on six mothers (10% of the sample) after the instruments were developed and before starting the data collection to test the practicability,

applicability and to estimate the needed time to fill the instruments. No necessary modifications were done. Therefore, the pilot study sample was included in the total sample.

Procedure

- 1. Written Permission:** Official permissions were obtained from the administrators of the selected hospitals and chairmen of the Pediatric Department after explanation of the aim of the study.
- 2. Training Sessions:** The researcher attended and received training in conducting simulation session for two days. The training continued from 6-7 th December 2021 in Faculty of nursing –Menoufia University by a specialist in simulation education.
- 3. Researcher Preparation:** The researcher training himself for conducting simulation session using video-assistant about simulation, reviewing literatures and manikins suitable to prepare the researcher to conduct the study.

A review of past and current literature included books and articles was done to develop data collection tools before interviewing study subjects. This review helped the researcher to be acquainted with the actual dimensions and magnitude of the problem.

4. Data collection:

Assessment Phase:

- Data collection lasted from the first of October 2019 until January 2020; this study was conducted three days per the first week and two days per the second week for four months.
- The researcher introduced herself to the children and their mothers and explained the purpose and nature of the study.
- Assessing socio-demographic data of the mothers.

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- Assessing socio-demographic data of the children.
- Assessing mothers' knowledge about epilepsy as definition, causes, types, manifestation, triggers, complications and management of epilepsy. Assessing mothers' knowledge about simulation as definition, objectives, advantage and disadvantage of the simulation .
- Assessing mothers' practice of first aid measures pre, during and after seizure attack.
- Assessing the severity of anxiety symptoms of the mothers by using Hamilton Anxiety Rating Scale.
- Before each session, preparation of equipment (e.g. soft cloth, tissue paper, tongue depressor, pillow and dry cotton) was done. Then, attending parents were informed about the objectives of the session and the activities that will be done for each child.

Planning Phase:

This phase included analysis of the assessment phase (pretest) finding and the researcher identification of the actual needs of the studied children and their mothers by using the booklet and the brochure, setting program to meet all needs of children and their mothers depending on simulation training program, detecting number of sessions needed and time of each session, choosing appropriate topics and methods of education for each session and finally selecting suitable place for sessions.

General Objectives:

Apply simulation training program for the mothers of the children with epilepsy to increase their knowledge about epilepsy management and to decrease frequency of seizure attack in their children.

Specific Objectives:

- 1) Improve mother knowledge about epilepsy and simulation.

- 2) Apply first aid measures of seizure attack on the Sim Baby.
- 3) Reduce mothers' anxiety level through relaxation technique.
- 4) Involve mothers in the intervention to improve mothers' self-efficacy.
- 5) to improve mothers' self-efficacy.

Implementation Phase:

Mothers were divided into six groups, each group included ten mothers. Each group took three sessions in the first week and two sessions in the second week:

First Session:

- 1) The researcher started by dividing the session into two sections; the first section was theoretical knowledge about definition of epilepsy, seizure, causes, trigger and types of epilepsy. It took about 40 minutes.
- 2) Afterwards, the second section was theoretical knowledge about manifestation, complication, treatment of epilepsy and parents' role toward their children with epilepsy. It took about 40 minutes.
- 3) At the end of the session, the researcher answered mothers' questions, provided needed guidance and planned for future meeting

Second Session:

- 1) Theoretical knowledge was explained about simulation as definition of simulation and Sim baby, objectives, advantage and disadvantage of simulation .it took about 20 minutes.
- 2) During the session, booklets, brochures and posters were distributed. This assistant tool helps the mothers to gain more knowledge about seizure and the main steps for first aid of it. Besides, in the practical session teaching assisted tools as videos and brochures were given to the mothers.

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- 3) Each session was started by a summary of what has been discussed in the previous session. Also, the session ended by a summary of its contents and feedback from the mothers was obtained to ensure that they had got the maximum benefits.
- 4) At the end of session, the researcher answered mothers' questions, provided needed guidance and planned for future meeting.

Third Session:

- 1) The third session was practical session; it was about how to decrease anxiety level through breathing exercise (pursed-lip breathing, distraction, meditation and belly breathing). It took about 40 minutes.
- 2) At the end of session, the researcher answered mothers' questions, provided needed guidance and planned for future meeting.

Fourth Session:

- 1) Regarding fourth session it was used for practical part of the intervention, the researchers used seizure care simulation intervention in general lab in pediatric nursing department in the faculty of nursing, Menoufia University. It took about 60 minutes.
- 2) The researcher started with application of simulation scenario about first aid measures for epileptic child before, during and after seizure fit. Such as first aid measures before seizure attack (predicting signs of seizure as cyanosis, difficulty of breathing on SimBaby involuntary movement, abnormal eyes movement, excessive salivation and stiffness of the muscles by using the video which illustrated signs and symptoms of the seizure attack, staying calm and remain with the child, maintaining safe environment around the child through removing any dangerous

objectives and elevating the side) and first aid measures during seizure attack (protecting them by placing pillow under their head and loosen any tight clothes, opening the air way on the Sim Baby by head tilt chin lift, removing any secretion by tissue paper to avoid aspiration, putting any clean tissue paper or tongue depressor between the child teeth to avoid tongue falling back, avoid restraining the child to avoid fracture, avoid giving the child anything as water or juice to drink it, avoid moving the child unless he is in danger and avoid giving the child any medication during seizure attack except suppositories). First aid measures after seizure attack (Reassuring the person and let them know you will stay with them until they recover or until a paramedic arrives if an ambulance has been called, putting the child on the side to facilitate breathing, removing any secretion by any tissue paper, opening the windows and doors to maintain high oxygen level).

- 3) The researcher was used the manikins and videos to mothers which demonstrate all items of care to the epileptic child before seizure occurrence, how to identify per seizure triggers.
- 4) Seizure intervention was demonstrated to mothers through video illustrating all aspects of care.
- 5) During the 4th session the researcher illustrated seizure care to maintain child's safety, care during seizure attacks through video demonstration illustrating how to effectively ensure adequate ventilation, protecting child's tongue, protecting child from injury and how to maintain child's safety during seizure attack.
- 6) A clear explanation was given to mothers about how to record

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attacks, how to reassure child and maintain comfortable environment which maintain their sleeping after the seizure attack.

Fifth Session:

- 1) Fifth session was used for maternal re demonstration of care pre, during and post seizure in each group and ending the study with subjects.
- 2) Mothers were given opportunities during their hospitalization period to experiment care with seizure management until they verbalized self -confidence and readiness for providing their children intervention.
- 3) Direct reinforcement in the form of material rewards as well as affection and encouragement were provided as positive feedback.

Evaluation Phase (Posttest):

- 1) Posttest was done after one month for each mother during their follow up to assess mothers' knowledge, practices about epilepsy and anxiety level using the same instrument.
- 2) After simulation session mothers were provided a booklet containing brief information about epilepsy, how to conduct first aid measures for seizures session in simple way. The researcher also gave the mothers video - CD guide for how to deal with seizure behavior. Moreover, the researcher asked parent to practice simulation sessions daily for each child following the guided booklet and using available equipment at home.

Statistical analysis:

The collected data were tabulated & analyzed by SPSS (statistical package for the social science software) statistical package version 22 on IBM compatible computer. Graphics were done using Excel program.

Two types of Statistics were done:

- 1) **Descriptive statistics:** were Expressed as mean and standard deviation (X+SD) for quantitative data

or number and percentage (No & %) for qualitative data.

2) **Analytic statistics:**

Repeated-Measures ANOVA: is a test of significance used when we have a single line of data for each participant, with the repeated measures entered as separate variables on that same line (used for normally distributed quantitative variables)

Results

Table 1 revealed that 40% of the studied mothers Who have epileptic children ranged between 30 to < 40 years with mean of 32.4 ± 5.1 years. In relation to mothers' level of education, 46.7% of them had High education. Regarding marital status, 83.3% of them were married and 13.3% were divorced. Concerning their job, approximately more than two thirds of them were housewives (71.7%). All studied mothers responded with no regarding having a training about first aid Measures (100%).

Table 2 clarified that 40% of the studied children aged more than 5 years with the mean age (7.5 ± 1.2). Regarding gender of studied children, more than half of them were male (60%). In relation to diagnosis, 81.7% of the studied children diagnosed as epilepsy.

Figure 1 showed that 95% of the studied mothers had good knowledge about epilepsy on posttest.

Table 3 showed that the majority of the mothers had good knowledge about simulation on posttest compared to pretest (81.7% vs. 0% respectively). Therefore, there were very high statistically significant differences between mothers' total level of knowledge about simulation on posttest than on pretest ($P < 0.0001$).

Table 4 it was clear that mean and standard deviation on pretest were 4.5 ± 1.2 compared to 21.3 ± 1.8 on posttest. Therefore, there were very high statistically significant differences

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between mothers' knowledge on pre and posttests ($P < 0.0001$).

Table 5 showed that the mean and standard deviation of management Practice pre, during and after seizure attack was increased on posttest more than pretest. Also the mean and standard deviation of grand total practice was increased from 7.2 ± 2.5 on pretest to 34.2 ± 3.4 on posttest receptively. Therefore, there were very high statistically significant differences between mothers' management practice on pre and posttests ($P < 0.0001$)

Figure 2 shows that 98.3% of the studied mothers had more satisfactory

performance about seizure attack on posttest.

Table 6 represented that (78.3%) of the studied mothers of children with epilepsy had severe anxiety on pretest versus none on posttest. (21.7%) of the studied mothers of children with epilepsy had moderate anxiety on pretest versus none on posttest .None of the studied mothers of children with epilepsy had mild anxiety on pretest versus (60%) on posttest. Therefore, there were very high statistically significant differences between mothers on pre and posttests at 0.0001 level of statistical significance

Table (1): socio-demographic characteristics of the studied mothers (N = 60).

Maternal Socio demographic characteristics (n=60)	No	%
<u>Age (Years)</u>		
20 – < 30 years	23	39.3
30 – < 40 years	24	40
> 40 years	13	20.7
Mean \pm SD	32.4 \pm 5.1 years	
<u>Educational Level:</u>		
Illiterate/read & write	7	11.7
Secondary school or technical diploma	8	13.3
High education	28	46.7
Post graduate	17	28.3
<u>Marital status:</u>		
Married	50	83.3
Divorced	8	13.4
Widow	2	3.3
<u>Occupation:</u>		
Hand work	3	5
Housewife	43	71.7
Administrative work	14	23.3
Had any training about first aid measures?		
Yes	0	0
No	60	100
Total	60	100

Table (2): Distribution of Social Characteristics of the Studied Children (N = 60)

Social Characteristics of the Studied Children	No.	%
Age (Years) of child:		
< 2 years	16	26.7
2-5 years	20	33.3
>5 years	24	40
Mean ± SD	7.5 ± 1.2 years	
Gender:		
Male	36	60
Female	24	40
Diagnosis:		
Epilepsy	49	81.7
Convulsion	11	18.3
Total	60	100

Figure (1): Total Level of Knowledge of the Studied Mothers about Epilepsy on Pre and Posttests (n=60)

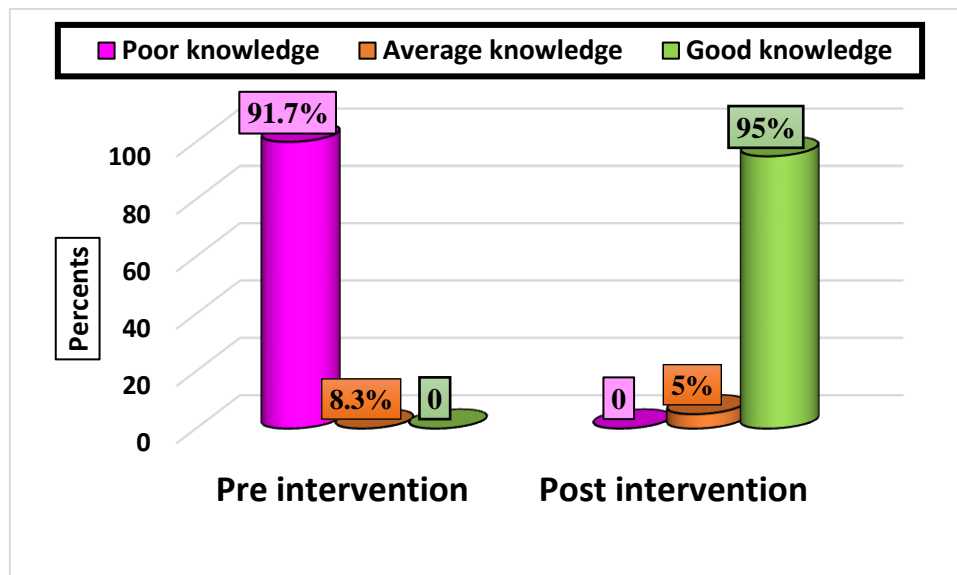


Table (3) Distribution of Studied Mothers According to their Total Level of Knowledge about Simulation on Pre and Posttest (n=60)

Knowledge about simulation	Pretest(n=60)		Posttest(n=60)		Test of significant	P value
	No	%	No	%		
Simulation						
Poor knowledge	60	100	0	0	111.3	<0.0001
Average knowledge	0	0	11	18.3		
Good knowledge	0	0	49	81.7		

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Table (4): Mean and Standard Deviation Score of Grand Total Knowledge about Epilepsy and Simulation on Pre and Posttest (n=60).

Items	Pretest (n=60)	Posttest (n=60)	Test of significant	P value
Mean ± SD total score	4.5± 1.2	21.3 ± 1.8	t=97.4	P< 0.0001

Table (5): Mean and Standard Deviation Score of Management Practice Pre, during and after Seizure Attack and Mean Grand Total Practice on Pre, and Posttests

Practice aspects post seizure attack	Pretest (n=60)	Posttest (n=60)	Test of significant (Paired t test)	P value
	Mean ± SD	Mean ± SD		
The mother role before seizure attack				
Mean ± SD	1.2 ±0.4	4.0 ± 0.1	15.5	<0.0001
The mother role during seizure attack				
Mean ± SD	3.6 ± 1.2	22.8± 3.5	28.8	<0.0001
The mother role after seizure attack				
Mean ± SD	2.5 ±1.1	7.2 ± 1.4	14.2	<0.0001
Mean Grand total practice about seizure attack management	7.2± 2.5	34.2 ± 3.4	t=32.7	<0.0001

Figure (2): Grand Total Level of Practice of the Studied Mothers Pre, during and after Seizure Attack on Pre and Posttest (N=60)

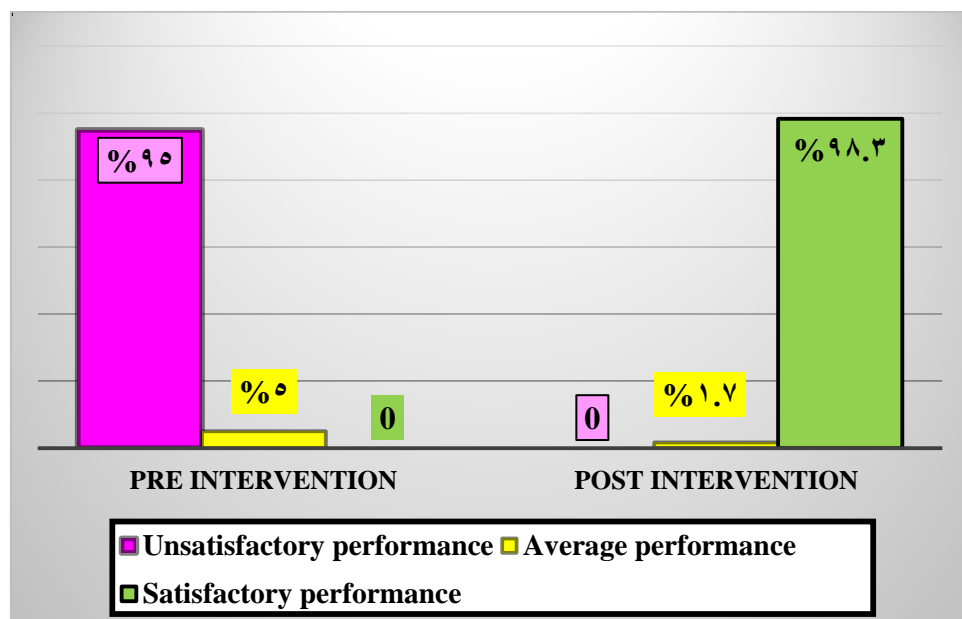


Table (6): The Level of Anxiety According to Hamilton Anxiety Rating Scale among the Studied Mothers on Pre and Posttests (N=60).

Anxiety levels	Pretest (n=60)		Posttest (n=60)		Test of sig.	P value
	No.	%	No.	%		
A- Mild anxiety	0	0	60	100	LR=109.5	P=<0.0001 HS
B- Moderate anxiety	13	21.7	0	0		
C- Severe anxiety	47	78.3	0	0		
D- very severe	0	0	0	0		
Total	60	100	60	100		

Discussion

Epilepsy is the most commonly diagnosed chronic disorder of the nervous system in childhood, affecting individuals of any age and ethnicity. Seizures are common in the pediatric age group and occur in 10% of the children. Most seizures in children are provoked by somatic disorders originating outside the brain, such as high fever, infection, syncope, head trauma, hypoxia, toxins, or cardiac arrhythmias, other causes include genetic syndromes, and cerebrovascular diseases (Kwon et al., 2022).

Public awareness and attitudes towards epilepsy differ across cultures. It has been noted that traditional beliefs and lack of knowledge strongly influence attitudes towards epilepsy. Epilepsy remains a stigmatized disease especially in Sub-Saharan Africa (Dessalegen et al., 2021).

Epilepsy is a burden disorder which affects the quality of life of child and their families. Epileptic child has Loss of control and independence; low self-esteem; fear; depression; stigmatization; lifestyle, social & employment restrictions; and financial strains. Children with epilepsy have more emotional, behavioral, and

cognitive difficulties than children in the general population. Prediction of epileptic child condition provides time to administer preventive measures to terminate the seizure before it happens also give epileptic child enough time to remove themselves from harms (Hamaad & Alseraty, 2019). Therefore, simulation training program was shown to have beneficial effects among the mothers of children with epilepsy.

Accordingly, the current study hypothesized that Mothers who will receive simulation training will have a higher level of knowledge about epilepsy and simulation on posttest than pretest. Also, Mothers who will receive simulation training will have a higher level of seizure management practice on posttest than on pretest. As well as, Mothers who will receive simulation training will have less anxiety level on posttest than on pretest.

▪ Part I: Social Characteristics of the Mothers and their Children:

Regarding characteristics of studied mothers, the current study revealed that near half of the studied mothers were aged between 30 to < 40 years. This result partially agreed with

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Hamaad & Alseraty, (2019) who conducted a study entitled "Impacts of Seizure Care Simulation Intervention on Mothers' of Epileptic Children Efficiency, Believes, Anxiety and Seizure Care". They found that More than two thirds of mothers' aged from 20-40 years.

On the contrary, Verma & Minu , (2021) who conducted a study entitled "A Study to Assess the Effectiveness of Video Assisted Teaching Program on Knowledge Regarding Seizure Among Mothers of Under Five Children in Selected Community Area, Uttar Pradesh" reported that majority of the studied mothers were aged between 26-30 years .

Concerning educational level of the studied mothers, more than one third of them had University education. This result was consistent with Huang et al, (2019) who conducted a study entitled "Effects of Educational Intervention on Changing Parental Practices for Recurrent Febrile Convulsions in Taiwan ". They reported that the majority of the studied mothers had college education.

This result was in line with Verma & Minu, (2021) who conducted "A Study to Assess the Effectiveness of Video Assisted Teaching Program on Knowledge Regarding Seizure Among Mothers of Under Five Children in Selected Community Area, Uttar Pradesh". They concluded that the Majority of the mothers had high school education.

This result was contradicted with Deepthi, (2016) who conducted "A Study to assess the effectiveness of structured teaching program on knowledge and practice of mothers regarding care of children with seizure disorder in Vilankurichi, Coimbatore ". They found that majority of the studied sample had school education this may be due to different community.

Regarding characteristics of studied children, the current study revealed that more than one third of the studied children were aged more than 5 years. This result was consistent with Hamaad & Alseraty, (2019) who conducted a study about "Impacts of Seizure Care Simulation Intervention on Mothers of Epileptic Children Efficiency, Believes, Anxiety and Seizure Care". They found that the majority of the studied children were aged more than five years.

This result was inconsistent with Deepthi, (2016) who conducted "A Study to assess the effectiveness of structured teaching program on knowledge and practice of mothers regarding care of children with seizure disorder in Vilankurichi, Coimbatore". They found that the majority of the children were aged between 1-3 years.

Part II: - Mothers' Knowledge regarding epilepsy as well as simulation.

Regarding Mothers' Knowledge about epilepsy, simulation, and first second hypothesis, the current study showed that Mothers who participated in the study had a higher level of knowledge concerning epilepsy and simulation on posttest than on pretest. This result comes in agreement with Hamaad & Alseraty, (2019) who conducted a study about "Impacts of Seizure Care Simulation Intervention on Mothers of Epileptic Children Efficiency, Believes, Anxiety and Seizure Care". They found that seizure care simulation intervention produces significant improvement in maternal knowledge. From the researcher's perspective, this could be attributed to the positive effect of simulation training program, good preparation of the mothers before the program; mothers were enthusiastic to know everything about epilepsy, oral presentations, group discussion, smart phone, communication board,

feedbacks and explanatory booklets and videos.

Beside, this finding was consistent with Turan & Yangöz, (2022) in their study about "Effect of educational interventions on level of epilepsy knowledge in children with epilepsy and parents: Systematic review and meta-analysis", they found that Educational interventions have high and beneficial effect on the level of epilepsy knowledge in the children with epilepsy and parents.

Regarding mothers' knowledge about epilepsy and simulation on pre and posttest. This study illustrated that the majority of studied Mothers had incomplete knowledge about epilepsy and simulation on pretest. this result came in agreement with Hamaad & Alseraty, (2019) who conducted a study about "Impacts of Seizure Care Simulation Intervention on Mothers of Epileptic Children Efficiency, Believes, Anxiety and Seizure Care" They found that most Saudi parents had poor knowledge which resulted in poor attitude and practice misconceptions for child intervention. The adequate education about epilepsy would improve management. From the researcher's perspective, this could be attributed to the lack of courses about epilepsy, their anxious mood related to their children, lack of time to read and understand the nature of the disease, workload pressures and failure to access accurate knowledge from professional source.

Also, this finding supported by Akbas & Kartal, (2022) who conducted a study about " An evaluation of the knowledge, attitudes, and behaviors of parents regarding epilepsy" they documented parents' lack of knowledge about epilepsy. Many parents have significant misunderstandings, negative attitudes, and parenting practices and their

knowledge also understanding of epilepsy needs to be improved.

This result was supported by El-Amin et al., (2021) who conducted a study about "Knowledge, attitudes, and practices of caregivers of children with epilepsy in Sudan" they suggested that caregivers require periodic epilepsy-related educational programs. This study is an invaluable tool for tailoring the delivery of information and support resources for caregivers in our region.

▪ **Part III: Seizure Management Practice of the Studied Mothers pre, during and after Seizure**

Regarding seizure management practices of the studied mother's pre, during, after seizure and second hypothesis, the current study showed that Mothers who participated in the study had a higher level of seizure management practice on posttest than on pretest. This result was consistent with Hamaad & Alseraty, (2019) who conducted a study about "Impacts of Seizure Care Simulation Intervention on Mothers of Epileptic Children Efficiency, Believes, Anxiety and Seizure Care" They found that seizure care simulation intervention produces significant improvement in maternal care practice which decrease maternal anxiety and raise their self-efficiency. Also, From the researcher point of view, this could be due to the methods of teaching that were used in sessions which in turn helped mothers to acquire and improve their practices about first aid measures of seizure attack. In these sessions, demonstration and re-demonstration on first aid measures pre, during and after seizure attack were done by using the SimBaby, doll and assisted videos. Beside, mothers felt empowered to assist their children with epilepsy through application of first aid measures of epilepsy. After the program they appreciated that application of simulation training to

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teach them first aid measures of seizure attack can be used to prevent severe complication in their children and helped them how to deal with their children's pre, during and after seizure attack .

In the same context, the study was consistent with Shahin & Hussien, (2021) in their study about "Knowledge, attitude, practice, and self-efficacy of caregivers of children with epilepsy: impact of a structured educational intervention program", they concluded that significant improvements in reported practice as well as the self-efficacy scores of caregivers of children with epilepsy following the implementation of the educational intervention, which reflects the importance of providing educational intervention to improve the knowledge, attitude, practice, and self-efficacy of epilepsy children caregivers.

This result was consistent with Al-Dosary et al., (2022) who conducted a study about "Public awareness of first-aid management of seizures in Saudi Arabia" they concluded that the awareness of seizure first-aid measures is still inadequate among the public in Saudi Arabia. The current finding underscores the importance of simulation videos on social media and/or field-training campaigns to improve the public awareness of seizure first-aid measures.

Regarding mothers' management practice of seizure on pre and posttest. This study revealed that the lowest level of mothers' management practice of seizure was on pretest. This finding agreed with Saraswathi, (2019) who conducted a study under the title " A study to assess the effectiveness of structured teaching program on knowledge regarding home care management of epilepsy among the mothers of children with epilepsy" it was concluded that the majority of the

studied mothers had inadequate level of knowledge about home care management of epilepsy on pretest. From the researcher's perspective, this could be attributed to the unsatisfactory knowledge of the studied mothers which was reflected negatively on their practices.

Furthermore, this result came in agreement with Alsudairy et al.,(2017) who conducted a study about "Assessment of Knowledge , Attitude and Practice of Parents towards Epilepsy among Children in Jeddah City" they concluded that most of Saudi parents had poor knowledge regarding the epilepsy that resulted in poor attitude and practice misconceptions. The adequate education about epilepsy would increase the incidence of disease management.

However, this finding contradicted with Kolahi et al., (2017) who conducted a study about "Knowledge, attitudes, and practices among mothers of children with epilepsy: A study in a teaching hospital" they concluded that the right first-aid measures at time of the last seizure, mothers' practices were acceptable.

▪ **Part IV: Hamilton Anxiety Rating Scale for the Studied Mothers**

Regarding Hamilton Anxiety Rating Scale for the studied mothers and third hypothesis, this result showed that mothers who participated in the study had less anxiety level on posttest than on pretest. This study was consistent with Hamaad and Alseraty, (2019) who conducted a study about "Impacts of Seizure Care Simulation Intervention on Mothers of Epileptic Children Efficiency, Believes, Anxiety and Seizure Care" They found that seizure care simulation intervention produces significant improvement in maternal knowledge, change their attitude and improve their care practice which decrease maternal anxiety and

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raise their self-efficiency and stress about prognosis of the disease. From the researcher's perspective, this could be attributed to the effectiveness of the methods of teaching that were used in sessions which in turn helped mothers to decrease anxiety level. In these sessions, demonstration and re-demonstration of pursed-lip breathing and belly breathing was done and using of additional materials as illustrated videos and booklet.

In the same context, Nia et al., (2021) conducted a study about "The Effects of Family-Centered Empowerment Model on Depression, Anxiety, and Stress of the Family Caregivers of Patients with COVID-19: A Randomized Clinical Trial " they concluded that The combination of a face-to-face orientation session and online methods of FCEM is likely to lower stress, anxiety, and depression among caregivers. It can be contributed to the practicability, simplicity, and effectiveness of the intervention.

Regarding anxiety level of the studied mothers on pre and posttest. This study illustrated that the majority of the studied Mothers had higher level of anxiety on pretest. This result was consistent with Dabilgou et al., (2022) who conducted a study about "Anxiety and Depression among Family Caregivers of Children with Epilepsy in Burkina Faso". The study revealed very high rates of anxiety and depressive disorders among caregivers of CWE in Burkina Faso. The presence of anxiety and depressive disorder was significantly associated with the gender of caregivers, relation to patient, marital status, gender of patients, and frequency of epilepsy seizure. From the researcher's perceptive this could attribute to most of parents were upset when their children diagnosed with epilepsy, financial demands, increase concern

about the child's future, poor communication with other relatives, lack of pleasure time outside the home, fearing that the child may have a seizure and some mothers think that the child's epilepsy is due to neglect during pregnancy.

In the same context, Zhang et al., (2021) conducted a study about "Investigation of Anxiety, Depression, Sleep, and Family Function in Caregivers of Children With Epilepsy" they concluded that anxiety and depression status are common in caregivers of children with epilepsy, with depression status being more prominent. Moreover, a considerable proportion of caregivers had poor sleep quality and unhealthy family function. Furthermore, this result came in agreement with Amiri et al., (2020) in their study about "High Rate of Psychopathology in Parents of Children with Epilepsy " they concluded that a high rate of psychiatric disorders was observed in Iranian parents of children with epilepsy. This pattern was not limited to mothers but was applicable to fathers, as well.

▪ **Part V: Pearson Correlation between Studied Variables**

Regarding Pearson correlation between grand total post knowledge score and Grand total post practice score. The current study revealed that there was appositve correlation between grand total post knowledge score and grand total post practice score. This result was in line with Deepthi, (2016) who conducted a study entitled "A Study to assess the effectiveness of structured teaching program on knowledge and practice of mothers regarding care of children with seizure disorder in Vilankurichi, Coimbatore". The study showed that there was a positive correlation between the knowledge and practice in posttest. From the researcher perceptive this could

attribute to improved mothers' knowledge level due to organized education program, use of different education methods, and professional selection of education topics, also, good selection of suitable sitting, time and desire of parents to increase their knowledge which in return improved mothers' management practice of seizure.

Conclusion

Based on the Finding of the Current Study it concluded that:

The hypotheses were accepted and the implementation of simulation training program improved mothers' knowledge and practices about epilepsy on posttest than on pretest. Also, it contributed to lower levels of anxiety in the mothers on posttest than on pretest, which in return decreased frequency of seizure attack in their children.

Recommendations

Based on the Finding of the Current Study and Conclusion, the following Recommendations are Suggested:

- Ongoing in-service education programs about epilepsy should be designed and implemented at all pediatric department especially in out-patient clinics to improve mothers' knowledge and practices of epilepsy.
- Integrating simulation training into pediatric medical departments to improve caregivers' knowledge and practice regarding the most common chronic disease.
- Maintain suitable health institution in all community areas which children with epilepsy and their mothers can contact in emergency situation to provide safe life intervention and satisfy all their suspected needs.
- All family members should maintain a therapeutic psychological and physical environment for children with

epilepsy which help children to explore the world, master the developmental tasks of childhood and satisfy all recommendations for all aspects of child growth and development.

- Different methods of teaching and learning such as group discussion, presentations, demonstration and re-demonstration should be used for improving caregivers' knowledge about epilepsy in outpatient clinics

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