

Nurses Performance Regarding Caring for Patients with Seizure

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Abstract

Background: Seizure is a brief episode of signs or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. **Aim:** the present study aimed to assess nurses' performance regarding caring for patient with seizures. **Design:** descriptive exploratory design **Setting:** Neurological ICU and Emergency Unit at Elsheikh Zayed specialized hospital, 2nd floor, 6th October. **Subject:** a convenient sample of all available nurses (50) working in neurological ICU, emergency unit at ELsheikh Zayed specialized hospital. **Tools:** three tools were used nurses' self-administered knowledge questionnaire, nurses' observational checklist and likert scale to assess nurses' attitude regarding patient with seizures. **Result:** the result of this study showed that, 84% of the studied nurses had unsatisfactory level of knowledge, while 80.0% of them had positive attitude and 74% of them had unsatisfactory level of practice regarding care of patient with seizure. Also, there was fair positive correlation between total nurses knowledge and their total practice level while there was no statistical significance difference association between total nurses knowledge and their attitude toward seizure disease **Conclusion** the majority of the studied nurses had unsatisfactory level of knowledge and three quarters of them had unsatisfactory level of practice regarding care of patient with seizure. While the majority of them had positive attitude Also. **Recommendations:** in-service training program must be developed based on nurses' needs assessment regarding care of patients with seizure.

Keywords: Nurses Performance Caring Patients with Seizure.

Introduction

Seizures are among the most common neurologic symptoms in all human populations. It defined as paroxysmal events of transitory alteration in consciousness or other signs or symptoms that can be due to brain dysfunction, it's an abnormal behavior caused by abnormal electrical activity in the brain. In contrast, epilepsy is a group of disorders marked by recurrent seizures over a prolonged period of time (Hesdorffer et al., 2012).

Seizure is a brief episode of signs or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. The outward effect can vary from uncontrolled jerking movement (tonic-clonic seizure) to as subtle as a momentary

loss of awareness (absence seizure). Diseases of the brain characterized by an enduring predisposition to generate, It's a result of sudden, usually brief, excessive electrical discharges in a group of brain cells (neurons). that can occur in different parts of the brain and depending on where in the brain this occurs, the person will experience different symptoms (Engel, 2013).

A seizure is a sudden surge of electrical activity in the brain that usually affects how a person feels or acts for a short time. Some seizures are hardly noticed perhaps a feeling of "pins and needles" in one thumb for a few seconds, during which, the person may become unconscious, fall to the floor, and jerk violently for several minutes (Ghosh et al., 2014).

Provoked seizures are single (isolated) seizures that may be caused by trauma, low blood sugar (hypoglycemia), low blood sodium, high fever, or alcohol or drug abuse, while Epileptic seizures are seizure events that are caused by excessive, abnormally synchronized, localized or widely distributed neuronal electrical discharges; usually these electrophysiological correlates are presumed by indirect evidence, although electrophysiological recordings sometimes are performed during seizures (Milton et al., 2013).

Non epileptic seizures are seizure events that are not caused by such electro cerebral discharges, sometimes divided into categories of organic non epileptic seizures, such as atypical syncope and parasomnias, and psychogenic non epileptic seizures, such as conversion symptoms and dissociative states (Stafstrom et al., 2015).

Nurses play a critical role in promoting the best health outcomes for people with epilepsy by imparting information about the disease, teaching self-management skills, and discussing treatment options with patients and their families. The nurse's role in seizures presents numerous psychosocial challenges it is a highly stigmatized, frequently misunderstood condition that may limit mobility and employment, as well as social and educational opportunities (Bagnall, 2017).

Significance of the study:

About 80% of people with seizures in developing nations do not receive appropriate treatment. 2.5 million new cases are diagnosed each year, mortality rates of people with seizures are 2-3 times that of the general population (Shorvon & Tomson, 2011). In Egypt the prevalence rate of seizures is 6.98/1000 individual (Ali & Nabi, 2014).

According to medical records of ICU in EL- Demerdash Hospital affiliated to Ain Shams University the total number of

patients admitted to the department was (640) and the number of patient who having seizures were (290) which representing (45%) of the total number of patients during the year 2015.

Aim of the study:

The aim of this study was to assess nurses' performance caring for patient with seizures through the following:

1. Assessing nurses' level of knowledge regarding patient with seizures
2. Assessing nurses' level of practice regarding patient with seizures
3. Assessing nurses' attitude regarding patient with seizures

Research questions:

This study aims at answering the following questions:

- What are the nurses' levels of knowledge regarding patients with seizures?
- What are the nurses' levels of practice regarding patients with seizures?
- What are the nurses' attitude regarding patients with seizures?

Subjects and methods:

Design: A descriptive exploratory design was utilized to meet the aim of the study. Exploratory research is a type of research conducted for a problem that has not been clearly defined (Chiarini et al., 2020).

Setting: The study was conducted in neurological ICU, emergency unit at Sheikh Zayed specialized hospital.

Subjects: A convenient sample was used in this study included all available nurses (n=50) caring for patients with

seizures in previously mentioned units and agreed to participate in this study.

Tools for data collection: Three tools were constructed by the researcher to collect data pertinent to this study, these tools are:

Tool I. Self-administered questionnaire

This tool was developed by the researcher based on reviewing of the current literature, Adopted from (Vancini, 2012), (Collins, 2011), (Coke, 2011), (Mushi, 2011) & (Lewis, 2010) and consists of two parts.

- **Part 1:** Concerned with Demographic characteristic data of nurses under study e.g., age, gender, level of education, years of experience and previous training seizure.

- **Part 2** Nurses' Knowledge questionnaire the part developed by the researcher to assess nurses' knowledge regarding patient with seizure and consist of 63 MCQ divided it to (5 parts). anatomy and function of the brain (14 question), seizure causes, types, diagnosis (20 question), simple and complex seizure (10 question), tonic and clonic seizure (8 question), Tonic, Atonic and Myoclonic seizures (11 question).

Scoring system: Each correct answer was given one grade and zero for incorrect answer with total score of 63 grades, classified as the following according to statistical report satisfactory level from 75% and more (grade = 47) while unsatisfactory level was less than 75%.

Tool II: Nurses practice Observational checklist

It was concerned with assessment of nurses' practice regarding care of patients with seizures, this part was quoted from (Dunphy, 2015), (Hopkins, 2012) (Doody, 2011), (Miller, 2010) and (Scanlon, 2010) and included (63 steps) divided into 7 parts as following:- nurses practice before seizure (9

steps), nurses practice during seizure (12 steps), and nurses practice after seizure (14 steps), nurses practice in prevent injury (8 steps), nurses practice in fear of seizure (8 steps), nurses practice in using coping mechanism (3 steps), and nurses practice in health teaching about patients self-care (9 steps).

Scoring system:

Not done or done incorrectly steps were done scored zero, while done correctly steps was given one grade with total score of 63 grades, classified as the following according to statistical report. The satisfactory level was from 80% (grade = 50) and more while unsatisfactory level was less than 80%

Tool III: Nurses' Attitude Likert scale

This tool was Adopted from (Hirfanoglu, 2009), (Chomba, 2007), (DiIorio, 2004) it was modified by the researcher after reviewing the relevant literature review and used to assess nurses' attitude regarding patient with seizures. it included statements that reflect nurses feeling and reaction toward patients with seizures.

Scoring system

This part consist of (19 statement), the responses ranges from zero (agree) to 2 (disagree). The score of items was summed up and the total multiplied by the number of items, and classified as the following according to statistical report: the positive attitude from 70% and more while the negative attitude less than 70%.

Validity The tools were revised for content validity by a jury of 7 experts. Two of them was professor of medical surgical nursing at faculty of nursing, Ain shams university, one professor, four assistant professors and one lecturer of medical-surgical nursing department at faculty of nursing, Ain Shams university. The expertises reviewed tools for clarity,

relevance, comprehensiveness, simplicity and applicability. Minor modification was done. Reviewed tools scores for nurses' self-administered knowledge questionnaire, nurses' observational checklist and questionnaire to nurses' performance caring for patient with seizures.

Reliability The developed tools were tested statistically by cronbach's alpha reliability test. The reliability test scores for nurses' self-administered knowledge questionnaire, nurses' observational checklist and questionnaire to nurses' performance caring for patient with seizures were 0.78, 0.85 and 0.90 respectively.

Pilot study: Was conducted on 10 % of nurses under the study in order to test the applicability of the developed study tools, the clarity of included questions as well as the average time needed to complete tools. The results obtained were studied and analyzed accordingly, modifications were made for the final development of the tools, the study nurses who shared in pilot study were excluded from the study sample.

Field work: First the researcher interviewing with the nurses under study in the previously mentioned settings to explain the aim of the study, the effect of this study on their performance as well as patient quality of care and to take their approval to participate in the study prior to any data collection.

Second the researcher assessing nurses' knowledge practice and attitude regarding caring for patients with seizure by using self-administered questionnaire sheet observational check list and likert scale as following:

A- The researcher filled the observational checklist in the morning and afternoon shifts during actual work and nurses were observed while working, it took about 30 minutes for every nurse personnel to be fulfilled by the researcher.

B- Then self-administered questionnaire sheet was filled by the nurses' caring for patients with seizure, it took about 40 minutes to fulfilled by nurse.

C- Likert scale it took about 15 minutes to be fulfilled 3- Data collection start in December 2017 and was done by the researcher 4 days per week (Sunday, Monday, Tuesday & Wednesday). It took 4 hours from (9 am to 1 pm and from 3pm to 7 pm) for 3 months in morning shifts.

Ethical consideration:

Ethical approval was obtained from the Scientific Ethical Committee of Faculty of Nursing, Sheikh Zayed Specialized. The purpose of the study was explained to the nurses before conducting the study and oral consent was obtained from them to participate in this study. Nurses under the study were given an opportunity to withdraw from the study without given a reason and they were assured that anonymity and Confidentiality of information was protected. Ethics, values, culture, and beliefs were respected.

Statistical design:

Statistical analysis was done by using Statistical Package for the Social Science (SPSS 24.0). Quality control was done at the stages of coding and data entry. Data were presented by using descriptive statistics in the form of frequencies and percentage for qualitative variables, and mean & standard deviation (SD) for quantitative variable. Fisher's exact test used to test the association between two qualitative variables or to detect differences between two or more proportions and the sample size is small. Graphs were done for data visualization using Microsoft Excel.

Statistical significant was depends on probability (p-value) as the following:

P-value \leq 0.05 was considered significant.

P-value ≤ 0.001 was considered as highly significant.

P-value > 0.05 was considered insignificant.

Results

Table (1) shows that (46 %) of nurses under study were aged between 20 to less than 30 years old with mean age (28.8 ± 6.4) years 80% of them were female Also (68%) of the nurses didn't take training courses while (36%) of them were having technical health institution and 38.0% of the study subject had on experience between 8 – 10 years.

Table (2) reveals that nurses under study have unsatisfactory knowledge as regard. Specific causes of seizure, Causes of acquired, Types, Diagnostic test for, Laboratory investigation for seizures, Side effect of medication, Time of Epanutin administration, Precautions during activities (82%, 90%, 86%, 80%, 80%, 84% and 90%) respectively while (66%) of them have satisfactory knowledge regard Causes of idiopathic seizures respectively

Figure (1) illustrates that, 84.0% of studied nurses had unsatisfactory knowledge regarding seizure while 16.0% of them had satisfactory knowledge level.

Tables (3) shows that, 82.0% of studied nurses had unsatisfactory practice regarding coping mechanism, 76.0% of them regarding health teaching about patient self-care, and 72.0% of them regarding nursing care before occurrence of seizure, in prevention of injury and reduce fear from seizure.

Figure (2) illustrates that, 74.0% of studied nurses had unsatisfactory practice regarding caring patient with seizure while 26.0% of them had satisfactory practice

Figure (3): shows that 80.0% of studied nurses had positive attitude regarding

caring patient with seizure while 20% of them had negative attitude.

Table (4): demonstrates that there were statistical significance differences between total nurses' knowledge levels and their gender, their educational level, and previous training regarding seizure which P – value $\leq .02, .05 \& .04$ respectively.

Table (5): analyses that there was a statistical significance difference between total nurses practice levels with their age, and their years of experience which P – value $\leq .05 \& .05$ respectively.

Table (6): shows that there was fair positive association between total nurses knowledge and their total practice level which $r = 0.399$ and $p - \text{value} \leq .05$ while there was no statistical significance difference association between total nurses knowledge and their attitude toward seizure.

Table (1): Frequency and percentage distribution of demographic characteristics of studied nurses (n= 50).

Demographic Characteristics	No.	%
Age / years		
20 < 29	23	46.0
30 < 39	14	28.0
40 < 49	9	18.0
50 < 60	4	8.0
Mean ± SD	28.8 ± 6.4 years	
Gender		
Male	10	20.0
Female	40	80.0
Level of education		
Master degree	4	8.0
B.Cs in nursing	14	28.0
Technical health institution	18	36.0
Diploma in nursing	14	28.0
Years of experience		
< 5 years	13	26.0
5 – 10	19	38.0
10- 15	3	6.0
15 – 20	15	30.0
Mean ± SD	14.2 ± 4.7 years	
Previous training regarding seizure		
Yes	16	32.0
No	34	68.0

Table (2): Frequency and percentage distribution of studied nurses level of knowledge regarding care of patients with seizure (n = 50).

Nurses' knowledge about seizure	Satisfactory		Unsatisfactory	
	No.	%	No.	%
Definition of Seizures	14	28.0	36	72.0
Causes of seizure	22	44.0	28	56.0
Specific causes of seizure	9	18.0	41	82.0
Causes of idiopathic seizures	33	66.0	17	34.0
Causes of acquired seizures	5	10.0	45	90.0
Types of seizure	7	14.0	43	86.0
Manifestation of seizure	22	44.0	28	56.0
First aids for seizure	20	40.0	30	60.0
Diagnostic test for seizures	9	18.0	41	82.0
Laboratory investigation for seizures	10	20.0	40	80.0
Purpose of EEG	23	46.0	27	54.0
Diagnostic measures for which not done for seizures	21	42.0	29	58.0
Purpose of Computerized tomography (CT)	17	34.0	33	66.0
Side effect of medication	10	20.0	40	80.0
Time of Epanutin administration	8	16.0	42	84.0
Priorities in nursing care for seizures patient	24	48.0	26	52.0
Precautions during activities	5	10.0	45	90.0
Seizures therapeutic management	19	38.0	31	62.0
Total	15	30.0	35	70.0

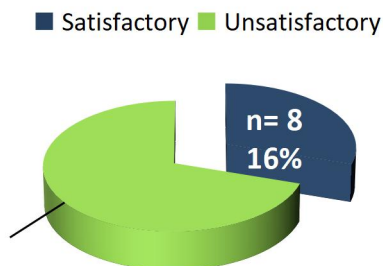


Figure (1): Total nurses' knowledge level regarding seizure (n= 50)

Table (3): Percentage distribution of total nurses' practice before, during and after seizure (n = 50).

Items	Satisfactory		Unsatisfactory	
	No.	%	No.	%
Before a seizure	14	28.0	36	72.0
During a seizure	18	36.0	32	64.0
After a seizure	15	30.0	35	70.0
Prevent injury	14	28.0	36	72.0
Reduce fear of seizure	14	28.0	36	72.0
Coping mechanisms	9	18.0	41	82.0
Health teaching about patients self-care	12	24.0	38	76.0
Total practice level	13	26.0	37	74.0

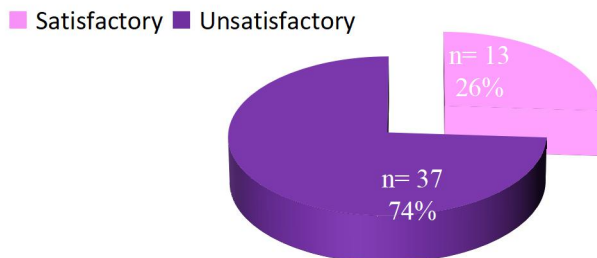


Figure (2): Total nurses' practice level regarding caring patient with seizure

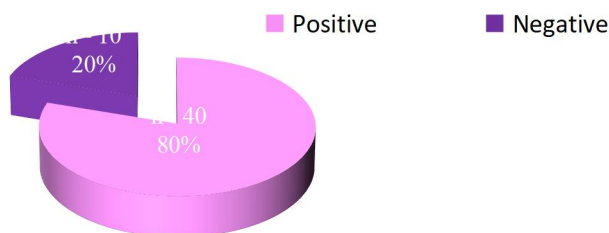


Figure (3): Total nurses' attitude level regarding caring patient with seizure

Table (4): Relation between demographic characteristics and nurses' knowledge (n = 50).

Demographic Characteristics	Satisfactory (n= 8)		Unsatisfactory (n=42)		fisher	P value	sig.
	No.	%	No.	%			
Age / years							
20 < 29	6	75.0	17	40.5	5.052	0.143	NS
30 < 39	0	.0	14	33.3			
40 < 49	2	25.0	7	16.7			
50 < 60	0	0.0	4	9.5			
Gender							
Male	4	50.0	6	14.3	5.357	0.02	S
Female	4	50.0	36	85.7			
Level of education							
Master degree	2	25.0	2	4.8	7.605	0.05	S
B.Cs in nursing	4	50.0	10	23.8			
Institution of nursing	2	25.0	16	38.1			
Diploma in nursing	0	.0	14	33.3			
Years of experience							
< 5 years	2	25.0	11	26.2	0.759	0.798	NS
5 – 10	4	50.0	15	35.7			
10- 15	0	0.0	3	7.1			
15 – 20	2	25.0	13	31.0			
Previous training regarding seizure							
Yes	5	62.5	11	26.2	4.071	0.04	S
No	3	37.5	31	73.8			

NS = not statistically significance differences $>.05$, S= statistically significance $<.05$

Table (5): Relation between demographic characteristics and nurses' practice (n = 50).

Demographic Characteristics	Satisfactory (n= 13)		Unsatisfactory (n=37)		fisher	P value	sig.
	No.	%	No.	%			
Age / years							
20 < 29	10	76.9	13	35.1	7.712	0.05	S
30 < 39	1	7.7	13	35.1			
40 < 49	2	15.4	7	18.9			
50 < 60	0	.0	4	10.8			
Gender							
Male	2	15.4	8	21.6	.234	0.629	NS
Female	11	84.6	29	78.4			
Level of education							
Master degree	0	.0	4	10.8	3.759	0.289	NS
B.Cs in nursing	6	46.2	8	21.6			
Institution of nursing	4	30.8	14	37.8			
Diploma in nursing	3	23.1	11	29.7			
Years of experience							
< 5 years	7	53.8	6	16.2	7.786	0.05	S
5 – 10	4	30.8	15	40.5			
10- 15	0	.0	3	8.1			
15 – 20	2	15.4	13	35.1			
Previous training regarding seizure							
Yes	5	38.5	11	29.7	0.337	0.562	NS
No	8	61.5	26	70.3			

NS = not statistically significance differences $>.05$, S= statistically significance $<.05$

Table (6): Correlation between total nurses knowledge, practice, and attitude level regarding caring of patient with seizure (n = 50).

Items	Total knowledge		
	r	P - value	sig.
Total practice	.399	0.05*	S
Total attitude	0.053	0.631	NS

NS= Correlation is NOT significant > 0.05, HS= Correlation is significant at the 0.01 level.

Discussion

Seizure can be considered a spectrum disorder because of its different cause, different types to vary in severity and impact from person to person and its range of coexisting condition. Some patient may have convulsion and loss of consciousness. Others may simply stop what they are doing have lapses of awareness and store into space for a short period while others may have hundreds of seizures expose them to many hazards and complication including injury (Carl & Lionel, 2015).

Regarding the demographic characteristics of the studied sample, the present study showed that less than half of the studied nurses under study were aged between 20 to less than 30 years old with mean age (28.8 ± 6.4) years and the most of them were female. Also more than two third of the nurses didn't take training courses while more than one third of them were having technical health institution and more than one third of the studied subject had on experience between 8 – 10 years.

The current study comes in agree with (Shehata et al., 2015) who studied "Knowledge, attitude and practice regarding people with epilepsy among nurses" and stated that more than half of the nurses (54.3%) were aged from 20–30 years. Their seniority was ≥ 10 years. The majority of them were females; they were holders of a diploma in nursing and did not attend any previous training programs

This result come in the line with (Unsar et al., 2020) who studied "Evaluation of nursing students' epilepsy-related

knowledge and attitudes " and reported that more than half of the studied sample were females with a mean age of 22.14 ± 1.81 years.

Also this result come in accordance with (Aneed et al., 2020) who studied "Nurses' Knowledge toward Procedure Nursing Care on Febrile Convulsions Patient in Emergency Unit Teaching Hospital in AL-Nasiriyah Cityand" and mentioned that more than three quarter of nurse are within age group of (20 – 29) year and the majority of nurse were female. But the same author come in consistent with present study in reporting that the majority of them are college of nursing and about two third of them have less than three years of experience and the majority of the nurses have participate in the training of neonatal intensive care unit.

But this result differ with (Prevos-Morgant et al., 2019) who studied 'Benefits of the epilepsy specialist nurses (ESN) role, standardized practices and education around the world" and reported that Most nurses included in the study got a secondary school degree in nursing sciences and had years of experience ranging from 3 months to 37 years, and most of them were working in the emergency unit and a small number of them were working in the neurology.

Concerning the nurses' knowledge about seizure, the present study revealed that nurses under study had unsatisfactory knowledge as regard to specific causes of seizure, causes of acquired, types, diagnostic test for, laboratory investigation for seizures, side effect of medication, time of epanutin administration and precautions during activities. This could be related to hospital does not offer nurses any opportunity for pre-

service, in-service, or special courses on important subjects that are related to their work, which is important to enhance and improve their knowledge.

This result contraindicated with **(Alhalaiqa et al., 2019)** who studied 'Knowledge and attitudes of Jordanian university students toward epilepsy: a cross-sectional comparison study' and reported that less than half of the studied sample had acceptable knowledge regarding epilepsy. Also this result comes inconsistent with who studied and reported that nurses had unsatisfactory level of knowledge regarding epilepsy.

This result comes inconsistent with **(Dayapoğlu et al., 2016)** who studied "Clinical nurses' knowledge and attitudes toward patients with epilepsy" and reported that the most of nurses had unsatisfactory level of knowledge regarding epilepsy.

Regarding the total nurses' practice level regarding caring patient with seizure, the present study illustrated that, the most of studied nurses had unsatisfactory practice regarding caring patient with seizure. These results come in the line with **(Vodougnon et al., 2019)** who studied " Knowledge, Attitudes and Practices of health sciences students regarding epilepsy at the end of their curriculum in Benin" and reported that less than one third of subjects rated their overall level of practice on epilepsy as satisfactory, more than one third as acceptable as limited.

Also this result come inconsistent with **(Alhalaiqa et al., 2016)** who studied " Knowledge and attitudes of Jordanian university students toward epilepsy: a cross-sectional comparison study " and reported that nurses had un satisfactory level of practices regarding epilepsy.

Regarding the relation between demographic characteristics and nurses' knowledge, the present study demonstrated that there were statistical significance differences between total nurses' knowledge levels and their gender, their educational

level, and previous training regarding seizure. This might be due to working of the nurses with baccalaureate degree in nursing as administrator while the nurses with secondary school in nursing had good opportunity of working as bedside nurse more than others nurses with baccalaureate.

This result partial agree with **(Aneed et al., 2020)** who studied " Nurses' Knowledge toward Procedure Nursing Care on Febrile Convulsions Patient in Emergency Unit Teaching Hospital in AL-Nasiriyah City" and stated that There is non-significant association between the nurses' knowledge with their demographic information at, except their gender and years' experience. Also this result was confirmed with **(Prevos-Morgant, 2019)** who studied 'Benefits of the epilepsy specialist nurses (ESN) role, standardized practices and education around the world' and reported that more than half of nurses with baccalaureate and majority of nurses with secondary school had score less than quarter of knowledge.

This result come in the line with **(Dayapoğlu et al., 2016)** who studied "Clinical nurses' knowledge and attitudes toward patients with epilepsy" There was a significant difference between the educational status of nurses and mean scores on the epilepsy knowledge scale and epilepsy attitude scale.

Concerning the relation between demographic characteristics and nurses' practice, the current showed that there was a statistical significance difference between total nurses practice levels with their age, and their years of experience. This result was confirmed by **(Shawahna et al., 2020)** who studied " Assessing knowledge, practice, attitudes of Palestinian undergraduate nursing students toward epilepsy and patients with epilepsy: a cross-sectional study" reported that performance was more prevalent among nurses with experience of two years and more than others. This may be attributed to the fact that nurses' performance with experience of two years and more work with patient who had seizure disorders for a longer period are

better than the nurses' performance with experience of less than two years.

Regarding correlation between total nurses knowledge, practice, and attitude level regarding caring of patient with seizure, the present study showed that there was fair positive association between total nurses knowledge and their total practice level while there was no statistical significance difference association between total nurses knowledge and their attitude toward seizure disease. This may be due to that the most of the studied sample had insufficient knowledge and incompetent practices. This result come in consistent with (Unsar et al., 2020) who studied nurses performance regarding seizure and reported that a significant positive correlation was found between the knowledge and attitude scores of the students regarding epilepsy. As the students' knowledge increased, their attitudes also increased positively toward epilepsy.

Conclusion

the majority of the studied nurses had unsatisfactory level of knowledge and three quarters of them had unsatisfactory level of practice regarding care of patient with seizure. While the majority of them had positive attitude Also, there was fair positive association between total nurses knowledge and their total practice level while there was no statistical significance difference association between total nurses knowledge and their attitude toward seizure disease.

Recommendations

Based on the results of the present study, the following recommendations can be suggested:

1. In-service training program must be developed based on nurses' needs assessment regarding care of patients with seizure.

2. A simplified and comprehensive manual book including nursing guidelines for

critical care nurses caring for patients with seizure should be provided.

3. Replication of the study on larger sample selected from different geographical areas of Egypt is recommended to generalize the study result.

References

- Alhalaiqa, F., Al Omari, O., Batiha, A. M., ALBashtawy, M., Masa'Deh, R., Al-Ghabeesh, S., & Bashayreh, I. (2018). Knowledge and attitudes of Jordanian university students toward epilepsy: a cross-sectional comparison study. *International quarterly of community health education*, 38(2), 75-82
- Ali, N. & M. Nabi (2014). "The Prevalence, Incidence and Etiology of seizures." *International Journal of Clinical and Experimental Neurology* 2(2): 29-39
- Bagnall, Richard D.; Crompton, Douglas E.; Semsarian, Christopher (2017). Genetic basis of sudden unexpected death in epilepsy. *Frontiers in neurology*, 2017, 8: 348.
- Carl E & Lionel C, (2015): Seizures and epilepsy: an overview for neuroscientist cold spring harborspect med jun:516).
- Chiarini, A., Belvedere, V., & Grando, A. (2020). Industry 4.0 strategies and technological developments. An exploratory research from Italian manufacturing companies. *Production Planning & Control*, 31(16), 1385-1398.
- Chomba, E. N., Haworth, A., Atadzhanov, M., Mbewe, E., & Birbeck, G. L. (2007). Zambian health care workers' knowledge, attitudes, beliefs, and practices regarding seizures. *seizures & Behavior*, 10(1), 111-119.
- Coker, M., Bhargava, S., Fitzgerald, M., & Doherty, C. (2011). What do people with seizures know about their condition?

- Evaluation of a subspecialty clinic population. *Seizure*, 20(1), 55-59.
- Collins, S. (2011).** The psychosocial effect of seizures on adolescents and young adults. *Nursing Standard*, 25(43), 48.
- Dayapoğlu, N. & M. Tan (2016).** "Clinical nurses' knowledge and attitudes toward patients with epilepsy." *Epilepsy & Behavior* 61: 206-209.
- DiIorio, C. A., Kobau, R., Holden, E. W., Berkowitz, J. M., Kamin, S. L., Antonak, R. F., & Gilliam, F. (2004).** Developing a measure to assess attitudes toward in the US population. *seizures & Behavior*, 5(6),965-975.
- Doody, C. M., & Doody, O. (2011).** Introducing evidence into nursing practice: Using the IOWA model. *British Journal of Nursing*, 20(11), 661-664.
- Dunphy, L. M., Winland-Brown, J., Porter, B., & Thomas, D. (2015).** *Primary Care: Art and Science of Advanced Practice Nursing*: FA Davis.
- Engel, J. (2013).** *Seizures and epilepsy (Vol. 83)*: Oxford University Press.
- Ghosh, D., Dutta, S., & Chakraborty, S. (2014).** Multifractal detrended cross-correlation analysis for epileptic patient in seizure and seizure free status. *Chaos, Solutions & Fractals*, 67, 1-10 .
- Hesdorffer, D. C., Ishihara, L., Mynepalli, L., Webb, D. J., Weil, J., & Hauser, W. A. (2012).** Epilepsy, suicidality, and psychiatric disorders: a bidirectional association. *Annals of neurology*, 72(2), 184-191 .
- Hirfanoglu, T., Serdaroglu, A., Cansu, A., Soysal, A. S., Derle, E., & Gucuyener, K. (2009).** Do knowledge of, perception of, and attitudes toward seizures affect the quality of life of Turkish children with seizures and their parents? *seizures & Behavior*, 14(1), 71-77 .
- Hopkins, J., & Irvine, F. (2012).** Qualitative insights into the role and practice of seizures Specialist Nurses in England: a focus group study. *Journal of advanced nursing*, 68(11), 2443-2453.
- Lewis, S. A., Noyes, J., & Mackereth, S. (2010).** Knowledge and information needs of young people with seizures and their parents: Mixed-method systematic review. *BMC pediatrics*, 10(1), 1.
- Miller, W. R. (2010).** Qualitative research findings as evidence: utility in nursing practice. *Clinical nurse specialist CNS*, 24(4), 191.
- Milton, J., & Jung, P. (2013).** *Epilepsy as a dynamic disease*: Springer Science & Business Media.
- Mushi, D., Hunter, E., Mtuya, C., Mshana, G., Aris, E., & Walker, R. (2011).** Social-cultural aspects of seizures in Kilimanjaro Region, Tanzania: knowledge and experience among patients and carers. *Epilepsy & Behavior*, 20(2), 338-343.
- Prevos-Morgant, M., Leavy, Y., Chartrand, D., Jurasek, L., Shafer, P. O., Shinnar, R., & Goodwin, M. (2019).** Benefits of the epilepsy specialist nurses (ESN) role, standardized practices and education around the world. *Revue neurologique*, 175(3), 189-193.
- Scanlon, A., & Cook, S. S. (2010).** Febrile seizures, genetic (generalized) epilepsy with febrile seizures plus, and Dravet's syndrome. *Journal for Specialists in Pediatric Nursing*, 15(2), 154-159
- Shawahna, R., & Jaber, M. (2020).** Assessing knowledge and attitudes of Palestinian undergraduate nursing students toward epilepsy and patients

with epilepsy: a cross-sectional study. *Epilepsy & Behavior*, 102, 106811.

Shehata, G. A (2015). "Knowledge, attitude and practice regarding people with epilepsy among nurses." *Aktualności Neurologiczne* 15(4): 192-198.

Shorvon, S. & T. Tomson (2011). "Sudden unexpected death in seizures." *The Lancet* 378(9808): 2028-2038.

Stafstrom, C. E., & Carmant, L. (2015). Seizures and epilepsy: an overview for neuroscientists. *Cold Spring Harbor perspectives in medicine*, 5(6), a022426.

Unsar, S., Özdemir, Ö., Erol, Ö., Bıkmaz, Z., & Bulut, E. Y. (2020). Evaluation of

nursing students' epilepsy-related knowledge and attitudes. *Epilepsy & Behavior*, 111, 107167.

Vancini, R. L., Benedito-Silva, A. A., Sousa, B. S., da Silva, S. G., Souza-Vancini, M. I., Vancini-Campanharo, C. R., & de Lira, C. A. B. (2012). Knowledge about seizures among health professionals: a cross-sectional survey in Sao Paulo, Brazil. *BMJ open*, 2(2), e000919

Vodougnon, C., Gérard, D., Bruand, P. E., Auditeau, E., Boumediene, F., Zohoun, I. Y., & Preux, P. M. (2019). Knowledge, attitudes, and practices of health sciences students regarding epilepsy at the end of their curriculum in Benin. *Epilepsy & Behavior*, 92, 165-170.