Assessment of Nurses' Compliance during Caring of Neonates with Convulsions

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Abstract

Back ground: Neonatal convulsions are one of the most serious neurological emergencies in neonates, which require immediate intervention.Managment of neonatal convulsions in Neonatal Intensive Care Unit is challenging. **Aim of the study:** the study aimed to assess of nurses' compliance during caring of neonates with convulsions Neonatal Intensive Care Unit (NICU). **Research design**: Descriptive design was utilized to conduct this study. **Settings**: The study was conducted at Neonatal Intensive Care Units at Pediatric Hospital and Maternity and Gynecological Hospital affiliated to Ain Shams University. **Subjects**: a convenient sample of 60 nurses and 60 neonates with convulsions at the previously mentioned settings over a six month periods. **Tools**: Tool I: Interviewing Questionnaire to assess nurse's demographic data and their knowledge regarding care of neonates with convulsions. Tool II: Observational checklist to assess nurses' practice regarding care of neonates with convulsions. **Results**: This study revealed that more than one third of the studied nurses had poor knowledge regarding to care of neonates with convulsions and nearly two thirds of them had competent level of practice regarding care of neonates with convulsions. There were significant positive correlation between nurses'total knowledge and their total practice. **Conclusion**: Based on the study findings, there was highly statistically significant relation between the studied nurses' performance and their years of experience, nurses' performance and their age and educational level there was no statistically significant relation between nurses' performance and their job title. There is a positive correlation between nurse's total knowledge and their practice. **Recommendations:** Providing orientation and continuous educational programs for nurses caring of neonates with convulsions.

Keywords: Convulsions, Compliance, Neonates.

Introduction

High Risk Neonates (HRNs) is defined as any neonate who is susceptible to morbidity and mortality because of dysmaturity, immaturity, physical disorders or complications ***(Blackburn, 2017).***

Neonatal convulsions are the commonest neurological emergency in the neonatal period. It is defined as are paroxysmal alteration of neurologic function, including behavioral, motor, and/or autonomic function and can occur at any gestational age. The neonatal period is the most vulnerable of all periods of life for developing convulsion, particularly in the first 1–2 days to the first week from birth associated with significant mortality and neuro-developmental disability ***(Agarwal & Fox, 2018).*** Worldwide, the incidence of convulsions in term neonates constitutes about 3 /1000 live births while, the incidence is even higher in preterm neonates, it constitutes about (57/ 1000 live births). Most (80%) neonatal convulsions occur in the first 1–2 days to the first week of life ***(Kneževic, 2016).***

The most common causes of neonatal convulsions include hypoxic-ischemic encephalopathy (HIE), intracranial hemorrhage, cerebral infarction, cerebral malformation, meningitis, septicemia, hypoglycemia, hypocalcaemia, hypo-magnesaemia, hypo-/hypernatremia, inborn errors of metabolism (IEM), kernicterus, maternal drug withdrawal, idiopathic benign neonatal convulsion, neonatal epileptic syndromes and congenital infections ***(Hart et al., 2017).***

Nursing compliance means nursing respect and competent with law, policies and procedure and commitment in providing nursing to meet the health needs of neonates with convulsions through direct care to promote, maintain and restore health in various setting to neonates, families and communities through nurses role. Nursing compliance can be influenced or controlled by variety of factors as lack of knowledge, level of education and years of nurses' experience. The compliance of nursing care of neonates with convulsions depends on nurses' knowledge and skills. Neonatal nurses' must be knowledgeable and competent for care of neonates with convulsions and skillful for care of hypoglycemia, hypocalcaemia and care of anticonvulsant medication ***(Alikari and Zyga, 2018).***

Significance of the study

Neonatal convulsions is one of the most serious neurological emergencies in neonates, which require immediate intervention. According to the annual statistics of NICU in Maternity and Gynecological Hospital, Ain Shams University, it was reported that the total admission number of high risk neonates in year 2017 was 3140 with 34 deaths in neonatal period. Neonatal convulsions were reported by 182 neonates and constitute 5.8% of total admission ***(Statistic office of NICU in Maternity and Gynecology Hospital, 2017)***. Nurses are constantly present at the neonate's bedside, so they are primary health care professional responsible for monitoring and addressing all neonatal needs. Nurses have an important, enabling role to provide neonatal care in neonatal intensive care unit. There must be a high percentage of interpersonal skills in the care of the neonates in addition to being technically competent. Nurses' lack of knowledge may be a barrier to adhere to evidenced based guidelines for prevents complication of neonatal convulsion. Nurses need to be well equipped with an appropriate level of knowledge and competent practices to enable them in providing professional care for neonates with convulsions. So that, knowledge and skills for caring of neonates with convulsions are necessary competencies of the nurses working in the Neonatal Intensive Care Unit (NICU). Therefore, it is important to assess nursing compliance regarding care of neonates with convulsions ***(Pisani et al., 2016).***

Aim of the work

The aim of the study:

This study aims to assess of nurses' compliance during caring of neonates with convulsions at NICU.

Research Question:

1- What is the nurses' knowledge and practice about care of neonates with convulsions?

2- Is there a relation between nurses' knowledge, performance and their compliance for care of neonates with convulsions?

Subjects and Methods

The subject and methods of the current study were discussed under the following four (4) designs:

I. Research Design
II. Operational Design
III. Administrative Design
IV. Statistical Design

I. Technical design:

Technical design for the study included research design, setting, subjects as well as tools of data collection.

A: Research design:

A descriptive research design was utilized in carrying out this study.

B: Setting:

The study was conducted at Neonatal Intensive Care Units at Pediatric Hospital this consists of two parts; the first part is specialized in the surgical condition and consists of two rooms each room is containing seven incubators, the second part is specialized in medical condition and consists of three rooms each one has eight incubators while Maternity and Gynecological Hospital affiliated to Ain Shams University consists of four rooms, each one contains nine incubators.

C: Subjects:

- Convenience sample of (60 nurses) worked at the previously mentioned settings was included in the study regardless of their age, gender, qualifications or experience.
- All neonates (60) diagnosed with neonatal convulsions was included in the study regardless their age, birth weight or gender.

Exclusion criteria:

- Neonates with tetanic spasms and meningitis.

D: Tools of data collection:

Data collection was obtained by using the following tools:

Tool I: Structured questionnaire format:

It was developed by the researcher after reviewing the relevant literature and after reviewed by the supervisors and was written in simple Arabic language to suit the level of nurses. It consisted of two parts:

Part I: These parts include the following:

A-Characteristics of the studied nurses. It consisted of five items related studied nurse's to age, educational level, years of experience, job description, and training courses related caring for neonates with convulsions.

B-Characteristics of the studied neonates. It consisted of ten items related sex, type of labour, gestational age, age by days, weight at birth, current birth weight and appropriateness of weight with the gestational age, recovery procedures made, Apgar score in the first minute after birth, and Apgar score in the fifth minute after birth.

C-Assessment of the studied neonates. It consisted of ten items related to diagnosis, presence of congenital anomalies, congenital anomalies type, convulsion occurrence, and causes of convulsion, the type of convulsion, times of convulsion, duration of hospitalization, anticonvulsant drugs given, and the supportive procedures made to the neonate during convulsion.

Part II: It was designed to assess the nurses' knowledge regarding to care of neonates with convulsions. It was quoted from ***(Hart et al., 2015)*** and modified and transited in to Arabic Language by the researcher, which included thirty questions about definition of neonatal convulsions, causes, signs, types, characteristics types of convulsions, difference between neonatal jitteriness and convulsions, complications of neonatal convulsions, diagnostic measures (laboratory, radiological test), nursing assessment for a neonates with convulsions, emergency equipments used, nursing care for neonates with convulsions, documentation of nursing care ***(Mulkey & Swearingen, 2015)***, anticonvulsant drug, methods of anticonvulsant drugs administration, and side effects of anticonvulsant drugs ***(Kliegman et al., 2018).***

❖ **Scoring system:**

Knowledge score for each answer was given as follows:

2 = Correct and complete
1 = Correct and incomplete
0 = Incorrect
Total scores of knowledge = 60

For each area of knowledge, the score of the items was summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score. The total knowledge scores were considered good if the score of the total knowledge ≥75 % (>45 score), considered average if it equals 60–≤75 % (36–44 score), and considered poor if it less than < 60 % (<36 score).

Tool II:- Observational checklists:

It was adapted from ***Perry & Potter, (2015).*** It used to assess nurses' performance for caring of neonates with convulsions including eight checklists each checklist consist of different steps as the following:-

1- Naso/Oropharyngeal suction consists of (28 steps).
2- Administering oxygen by cannula, incubator, and head box consists of (20 steps).
3- Cannula insertion consists of (16 steps).
4- Drawing sample consists of (17 steps).
5- Administration anti-convulsion drug consists of (29 steps).

6- Cardio respiratory monitoring consists of (14 steps).
7- Blood glucose monitoring consists of (14 steps).

❖ **Scoring system:**

Practice score for each practice was given as follows:

1 = Done.
0 = Not Done.
Total scores of practices = 138

For each area of practice, the score of the items was summed-up and the total divided by the number of the items. These scores were converted into a percent score. The total practices were considered competent if the score of the total practices ≥ 90% (≥ 124 score), and considered incompetent if it is less than 90% (< 124 score).

Content validity and reliability:

Content validity was done by jury committee of three experts in neonatal nursing and medicine who reviewed the tools for clarity, relevance, comprehensiveness, understanding, and applicability and modification was done accordingly

Reliability of the tools was done by using Cronbach's Alpha coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool. The internal consistency of knowledge was 0.82, and 0.91 for practices.

II. Operational design:
Preparatory phase:

A review of past and current related literature was done to cover the various aspects of research problem. It was done by using the available articles, periodical journals and text books to be acquainted with the research problem.

Ethical considerations:

Ethical and administrative committee of faculty of nursing at Ain Shams University approval was obtained. Consent was obtained from each participant. The aim of the study explained to each nurse included in the study before starting data collection process and the expected outcomes of the study and they were assured that the study is harmless and their participation is voluntary and they have the right to withdraw from the study at any time and assured that all the gathered data will be guaranteed and used for research purpose only.

Pilot study:

A pilot study was conducted on 10% of the total sample size (6) nurses. The pilot study was used to test the clarity, applicability and time consumed to fill the study tools. The pilot has also served to estimate the time needed for each subject to fiII in the questions. According to the results of the pilot, no corrections and omissions of items were performed. The pilot participants were included in the main study sample because no modification was done after conducting pilot study.

Field work:

The actual field work of this study was carried out over 6 months period started from the beginning of November 2019 till the end of April 2020 from 9 a.m. to 2 p.m. The researcher was available two days per week in each setting (Saturday and Sunday) to collect the data. The researcher introduced herself to the study subjects and the study questionnaire was distributed for nurses to fill in and the researcher was present to clear any tool statement. The researcher also assessed the nurses' performance for care of neonates with convulsions by using checklists and assesses nursing practice during providing their actual nursing care. The required time to collect data from each nurse about 40 -50 minutes.

III. Administrative design:

An official letter from Dean of the Faculty of Nursing– Ain Shams University was delivered to the general directors of each hospital. A full explanation about the aim and importance of the study was explained to them in order to gain their support and cooperation hence the nurses' consent was obtained before starting data collection.

IV. Statistical design:

Statistical analysis was done by using Statistical Package for Social Sciences (SPSS) version 20. Data were collected, revised, coded, organized, tabulated, and analyzed using frequencies, number, percentage, mean scores, standard deviation and correlation coefficient. Data were presented in the form of tables and figures. Quantitative data was presented by mean ($\overline{X}$) and standard deviation (SD). Qualitative data was presented in the form of frequency distribution tables, number and percent. It was analyzed by Chi- square test (X^2) & correlation to detect the relation between the variables of the study (P- value). Statistical significance was considered as follows: P- value > 0.05 Not significant, P- value < 0. 05 Significant, P- value < 0.001 highly significant.

Results:

Table (1): This table shows that, the mean age of nurses was 28.85 ± 5.85 years, and half (50.0%) of them had nursing diploma. As regards years of experience, it was observed that, less than half (46.6%) of nurses had more than 10 years of experience with mean of 15.50 ± 8.79 years.

Table (2): This table shows that, the mean chronological age of studied neonates was 5.23 ± 2. 97 days. Regarding to neonate's birth weights the mean birth weight was 2260 ± 0.410 grams and their mean actual weight in grams was 2670 ± 0.474gms.

Figure (1): This figure shows that 33.3% and 31.7% of the studied neonates had Intra cranial hemorrhage (ICH) and hypocalcemia respectively. Also, this table shows that 16.7% of the neonates had asphyxia and 10% of neonate had hypoglycemia.

Figure (2): This figure shows that, more than two fifths (41.7%) of the studied neonates had myoclonic convulsions followed by one third (33.3%) with subtle convulsion, and one quarter (25.0%) of them had clonic convulsion.

Figure (3): This figure demonstrates that, more than one quarter (28.3%) of the studied nurses had good knowledge regarding care of neonate with convulsions and less than one third (30.0%) of them had average knowledge, while more than two fifths (41.7%) of them had poor knowledge.

Figure (4): This figure show that, less than two thirds (65.0%) of the studied nurses had competent total practices score regarding caring of neonates with convulsions, while more than one third (35.0%) of them had incompetent total practices score.

Table (3): This table shows that, there were highly statistically significant differences between nurse's age, educational level, years of experience of the studied nurse's and their knowledge regarding to care of neonate's with convulsions with x2 11.34,15.68,10.26 and p value 0.001. While there were statistically significant relation between job description and their knowledge regarding to care of neonate's with convulsions with x2 14.31and p value 0.003.

Table (4): This table shows that, there were highly statistically significant difference between years of experience of the studied nurse's and their practice regarding to care of neonate's with convulsions with x2 18.02 and p value 0.001 and there were statistically significant difference between age, educational level of the studied nurse's and their practice regarding to care of neonate's with convulsions with x2 12.70,12.72 and p value 0.005,while there were no statically significant difference between job description of the studied nurse's and their practice regarding to care of neonate's with convulsions x20.034,and p value 0.854.

Table (5): This table shows that, there were statistically significant positive correlations between the studied nurses' total knowledge and their total practices regarding caring of neonates's with convulsions *(*P<0.005).

Table (1): Number and Percentage Distribution of the Studied Nurses According to their Characteristics, (n = 60).

Nurses 'characteristics		No.	%
Age (Years):			
Less than 20 years		2	3.3
20 : < 25		13	21.7
25 : < 30		15	25.0
30 : < 35		18	**30.0**
≥35		12	20.0
$\bar{X}$ ± SD	28.85 ± 5.85		
Educational level:			
Nursing diploma		30	**50.0**
Technical nursing institute		15	25.0
Nursing diploma with specialty		4	6.7
Bachelor of nursing		11	18.3
Years of experience:			
Less than one year		0	0.0
1 : > 5		19	31.7
5 : > 10		13	21.7
≥10		28	**46.6**
$\bar{X}$ ± SD	15.50 ± 8.79		

Table (2): Number and Percentage Distribution of the Studied Neonates According to their Characteristics, (n = 60).

Neonate's characteristics		No.	%
Chronological age (days):			
Less than 5 days		25	41.7
5: < 10days		27	**45.0**
10 : < 15days		8	13.3
$\bar{X}$ ± SD	5.23 ± 2. 97		
Birth Weight (grams):			
1000 : < 1500 gm		2	3.3
1500: < 2000 gm		8	13.3
2000 : < 2500 gm		25	**41.7**
2500 : < 3000 gm		24	40.0
≥ 3000 gm		1	1.7
$\bar{X}$ ± SD	2260 ± 0.410		
Current weight in grams:			
1500 : < 2000 gm		12	20
2000 : < 2500 gm		15	25.0
2500 : < 3000 gm		22	**36.7**
≥ 3000gm		11	18.3
$\bar{X}$ ± SD	2670 ± 0.474		

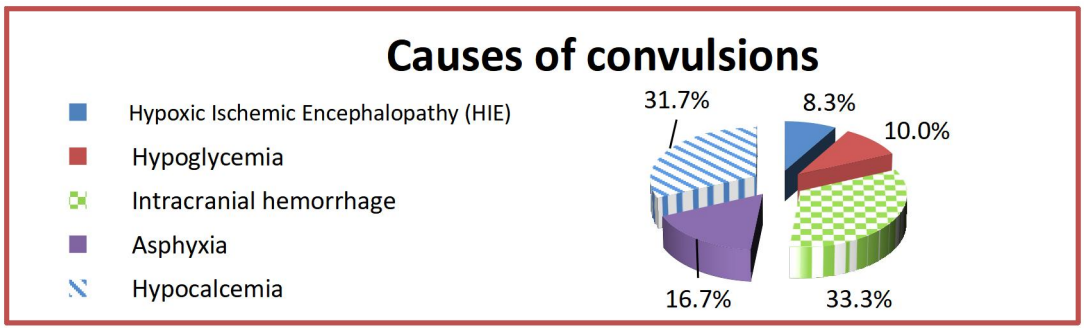

Figure (1): Percentage Distribution of the Studied Neonates According to their causes of convulsions, (n = 60).

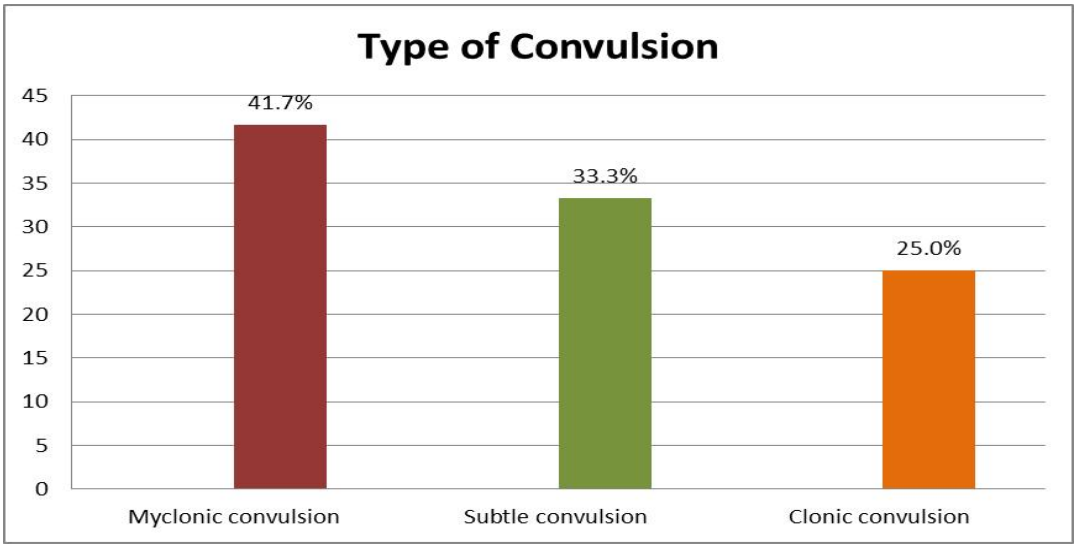

Figure (2): Percentage Distribution of the Studied Neonates According to the Type of Convulsions Present, (n = 60).

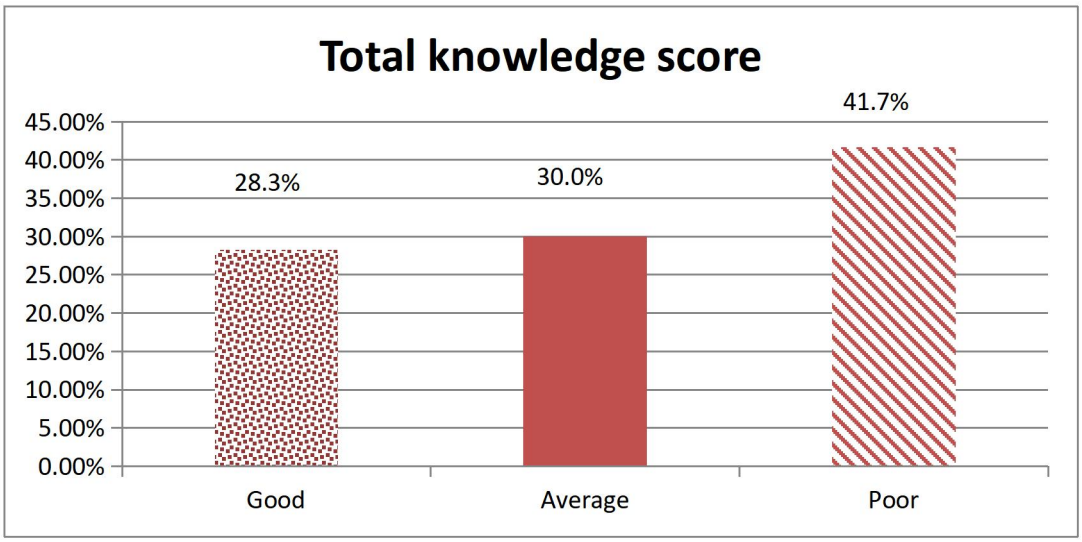

Figure (3): Percentage Distribution of the Studied Nurses' Total Score of Knowledge regarding to Care of Neonates with Convulsions, (n = 60).

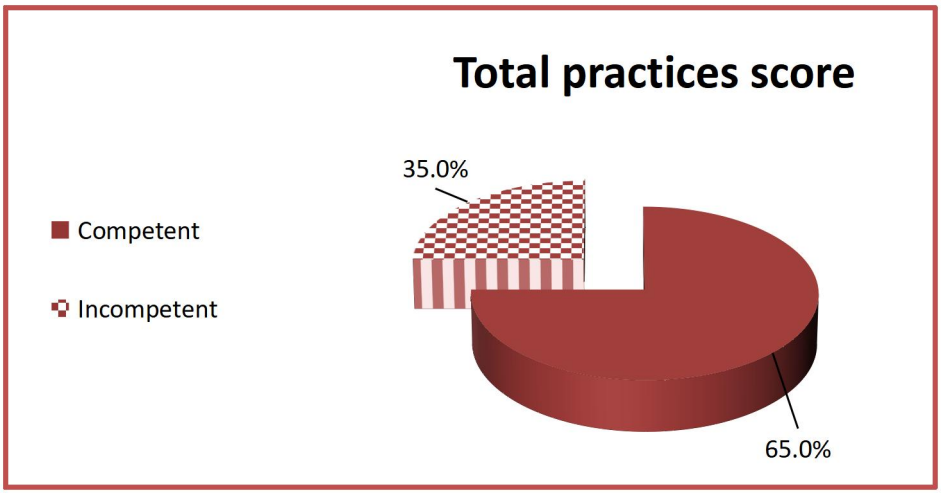

Figure (4): Percentage Distribution of the Studied Nurses' Total Practices regarding to Care of Neonates's with Convulsions, (n = 60).

Table (3): The Statistical Relation between the Studied Nurses' Demographic Characteristics and their Total Score of Knowledge, (n= 60).

Demographic Characteristics	Total score of knowledge						Significance test	
	Good		Average		Poor			
	No.	%	No.	%	No.	%	X^2	P-value
Age (Years):								
Less than 20	0	0.0	0	0.0	2	3.3		
20: < 25	1	1.7	3	5.0	9	15.0		
25 :< 30	1	1.7	6	10.0	8	13.3	11.34	**0.001***
3 0: < 35	4	6.7	7	11.7	7	11.7		
≥35	5	**8.3**	5	8.3	2	3.3		
Level of qualification:								
Nursing diploma	12	**20.0**	10	16.7	8	13.3		
Technical nursing institute	1	1.7	10	16.7	4	6.7	15.68	**0.001***
Nursing diploma and specialty	2	3.3	0	0.0	2	3.3		
Bachelor of nursing	4	6.7	4	6.7	3	5.0		
Years of experience:								
Less than one year	0	0.0	0	0.0	0	0.0		
1: < 5	1	1.7	6	10.0	12	20.0		**0.001***
5 : < 10	1	1.7	4	6.7	8	13.3	10.26	
≥10	9	**15.0**	13	21.7	6	10.0		
Job title:								
Nursing supervisor	1	1.7	8	13.3	11	18.3	14.31	**0.003***
Nurse staff	7	**11.7**	17	28.3	16	26.7		

No statistical significance (P > 0.005)
Statistically significant (P ≤ 0.005)
A highly statistical significant (P ≤ 0.001)

Table (4): The Statistical Relation between the Studied Nurses' Characteristics and their Total score of Practice, (n= 60).

Demographic Characteristics	Total score of practice					
	Competent		Incompetent		Significance test	
	No.	%	No.	%	X^2	P-value
Age (Years):						
Less than 20 years	1	1.7	1	1.7		
20: < 25	4	6.7	9	15.0		
25 : < 30	6	10.0	9	15.0	12.70	**0.005***
30: < 35	10	**16.7**	8	13.3		
≥35	9	15.0	3	5.0		
Level of qualification:						
Nursing diploma	20	**33.3**	10	16.7		
Technical nursing institute	4	6.7	11	18.3		
Nursing diploma and specialty	3	5.0	1	1.7	12.72	**0.005***
Bachelor of nursing	10	16.7	1	1.7		
Others	0	0.0	0	0.0		
Years of experience:						
Less than one year	0	0.0	0	0.0		
1: < 5	7	11.7	12	20.0	18.02	**0.001***
5: < 10	9	15.0	4	6.7		
≥10	22	**36.7**	6	10.0		
Job title:						
Nursing supervisor	11	18.3	9	15.0		
Nurse staff	23	**38.3**	17	28.3	0.034	0.854

No statistical significance (P > 0.005)
Statistically significant (P ≤ 0.005)
A highly statistical significant (P ≤ 0.001)

Table (5): Correlation between the Studied Nurses' Total Score of Knowledge and Total Score of Practices regarding Caring of Neonates's with Convulsions, (n= 60).

Parameter	Total score of knowledge	
	r	P-value
Total score of practices	0.971	0.00*

** Highly statistical significant (P 0.001).

Discussion:

Neonatal convulsions are often caused by severe neonatal conditions including hypoxia- ischemic, cerebral hemorrhage, metabolic disturbance and infection. Also it may be attributed to syndromes, malformations or more rarely to primary epilepsy**.** Neonate with convulsions represent a high-risk population with increased mortality and risk for neurological handicaps and epilepsy in later life ***(Murry et al., 2018).***

The nurse plays an important role in caring of neonates with convulsions. So, the current study emphasizing the importance of nurse's role as a direct care provider who worked in NICUs**.**

The current study aims to assess nurses' knowledge and practice regarding care of neonatal with convulsions. The discussion the current study presented under the following parts:

Part I: Characteristics of the studied nurses and neonates:

The current study shows that, nurses aged between 30<35 years old with the mean was 28.85 ± 5.85 years**.** As regard their educational level, it was clear that one half of them were diploma and regarde their years of

experience the mean of the studied nurses was 15.50 ± 8.79 years. These results similar with the result of study performed by ***Mohamed, (2017)*** about nurses' compliance with neonatal care protocol regarding to mechanical ventilation, who found that the mean age of studied nurses was 28.8±9.6 years and the mean years' experience was 9.07±3.02 years and this finding of study agreed with ***Mohammed, (2017)*** in a study about ″quality of nursing care for neonates undergoing mechanical ventilation at Benha City″ who found that, less than half of the studied nurses were between 20 ≤ 25 years. These findings were in contrast with ***Adel & Abdel Fattah, (2018),*** who conducted a study of impact of educational program about care of neonates with convulsions on nurses' knowledge and performance in Assuit government reported that, and 47.7% had <5 years of experience.

Concerning academic qualifications of the studied nurses, the present study showed that, half of the studied nurses had nursing diploma**.** This may be due to the fact that nursing secondary school provide the community with large number of diploma nurses than other agencies such as faculties of nursing and technical institutes of nursing, These findings were in agree with ***Gouda et al., (2019),*** who studied nurses' knowledge and practices regarding to convulsions management of neonates in Egypt they reported that 52% of studied nurses were diploma nurse. Also, these findings were supported by the finding of ***Ahmed, (2019)*** in a study entiteled ″quality of nursing care provided for high risk neonates ″ who reported that, more than half of nurses had secondary school nursing. These finding was not supported by ***Apala, (2018),*** who conducted study of assessment of nurse's knowledge and regarding management of neonatal seizure disorders in Elmak Nimer Hospital University the reported that, 84% of studied nurses were bachelor degree.

Concerning the characteristics of studied neonates, the current study revealed that, the mean birth weight of the studied neonates was 2.26 ± 0.410 kg with mean gestational age was 34.75 ± 1.37weeks, three quarters of studied neonates were males and most of them are low birth weight. These findings were in line with ***Abd Elghany, (2015),*** who studied quality of care for neonates with convulsion in Benha University reported that, 61.4% of studied neonates were 32>36 of gestational age,, 68.6% were aged from 5>10 days and 50% were from 2000>2500 gram at birth. This was contraindicated with ***Chun et al. (2016)***. Who conducted a study to analyze the clinical spectrum and prevalence rates of various etiologies in neonates with convulsions disorder in NICU children's hospital, Taiwan. It was found that 94% of studied neonate's gestational age was 30>32aged and 60% of neonates were male.

As regard to type of delivery of the studied neonates, more than one half of the studied neonates were delivered by cesarean section. The findings was in agree to the findings of ***Beheshtipour et al. (2018)*** study about the effect of the educational program on Iranian premature neonate's in neonatal Intensive care unit who pointed out that the type of child birth in the majority of the subjects was cesarean delivery. The findings of the current study revealed that three quarters of the studied neonates.

As regards neonate's causes and types of convulsions, it was found that one third of the studied neonates had convulsion due to intracranial hemorrhage and hypocalcaemia was most common causes among the studied, it was found that more than one third of studied neonates had myoclonic convulsions. These findings were supported by the study done by ***Sood et al. (2018),*** who studied biochemical abnormalities in neonatal seizures, reported that, birth asphyxia as the etiology of seizures was seen in 45.71% of the studied neonates. The findings were incontrast with ***Taksandeet al. (2018),*** who conducted a study of clinico-biochemical profile of neonatal seizures reported that, subtle seizures as the commonest type of fits occurring in 50% of neonates.

Regarding to past history of neonatal convulsion, the results of the current study revealed that, more than one third of them had

twice per day, half of them convulsion occurred in the first day of birth and received phenytoin as an anti-convulsant drug. These findings were dis agree with ***Hannah, (2018),*** who conducted a study of Neonatal Seizures: Treatment Practices Among Term and Preterm University of California, San Francisco, United States of America while found that, Phenobarbital was the most widely used first-line medication gave more than 70% of cases.

Finally, the current finding clarified that more than one quarter of the studied nurses had good knowledge regarding care of neonates with convulsions and less than one third of them had average knowledge, while less than half of them had poor knowledge. The researcher point of view lack of training programs about neonatal convulsions and the absence of formal hospital policies management of neonatal convulsions. These findings were inconsistent with ***Taha et al. (2016),*** whom studied evaluation of nursing care provided to neonates with convulsion found that, 56.5% of studied nurses had good knowledge score followed by 24.2% who had fair knowledge score, while 19.4% had poor knowledge score. Form the researcher point of view, these findings may be attributed to the relation between sociodemographic characteristics of the studied nurses and their knowledge.

Form the researcher perspective these finding needs proper planning to improve nurses' knowledge as well as upgrade them to be up to level to work at NICU, since they are responsible to save neonates'life.

Furthermore, NICU nurses must hone their assessment skills such that they are able to identify the strategically intervene early as possible.

The current study show that two thirds of the studied nurses had competent practices regarding caring of neonates's with convulsions**,** while more than one third of them had incompetent practices regarding caring of neonates's with convulsions. These findings were emphasized by ***Ghaydaa et al. (2019),*** who conducted a study of knowledge; attitude and practice regarding neonates with convulsions among nurses mentioned that, good improvement in the mean practice scores observed following the implementation of the designed nursing protocol.

Finally, the current study illustrated the relation between the studied nurse's characteristics and their total knowledge and performance regarding caring of neonate's during convulsions.

The current study results showed that were highly statistically significant differences between the nurse's knowledge and (age, gender, educational level, years of experience and attending of pervious courses) where P-value < 0.001while there was statistically significant relation between their knowledge and job description P-value <0.003. These findings were incontrast with ***Ezenduka, (2018),*** who studied assessment of knowledge, attitude, and practice of nursing management of birth convulsion in federal medical centre Asaba, Delta State-Nigeria reported that, years of experience has no significant effect (p >. 05) on the nurses level of knowledge of nursing management of birth convulsion and statistically significant relations between the studied nurses' total score of knowledge and their age, educational level,.

The results of the current study showed that there were highly statistically significant differences between the nurse's total performance and their age, gender, educational level, years of experiences and attending of pervious courses, where all P-value 0.001 and there were statistically significant relations between their total score of practice and age and educational level (P<0.005), while there was no statistically significant relation between their total score of practice and job description (P>0.005). These findings were supported by the study of ***Ersdal &*** **Singhal** ***(2017),*** who study about nurses knowledge and practices regarding neonates with convulsion at Minia University Children Hospital, mentioned that there was statistically significant differences between demographic data of the study sample and their level of performance, namely level of

education and years of experiences while there is non-statistically significance was observed in relation to their job description.

The finding of the current study clarified there is positive correlation and statistically significant difference between the studied nurses' total knowledge and their total practice regarding care of neonates with convulsion. From the researcher's point of view, this could explained on the basis of associating the good level of nurses' knowledge with the competent level of performance provided for the neonates resulting in improving nurses' compliance regarding care of neonates during convulsion. These findings are in an accordance with the study of ***Zaki et al., (2018)*** entitled ″Assessment of Nurses 'Performance Regarding Care of High Risk Neonates at Intensive Care Units″ Who found that there appositive correlation between nurses 'total knowledge and their total performance. This result also agreed with ***Hegazy, (2016)*** who studied nurses' knowledge versus their performance in caring for neonates having convulsion and found that, there was statistically significant difference between total knowledge and total practice of the studied nurses. On the other hand, this finding was inconsistent with study of ***Anuja & Shristi, (2018)*** entitled "Knowledge and performance regarding asessment of high risk neonates among nurses working in selected hospitals of Rupandehi" they found that there was no relation between nurse's knowledge and their practice.

Form the researcher perspective these findings confirm the researcher recommendations to the importance of enhancing the neonatal convulsion care at NICU and importance of conducting on job and in service training for nurses.

Conclusion:

The current study concluded that more than one third of the studied nurses had poor knowledge regarding care of neonate with convulsions, while nearly two thirds of them had competent practice regarding care of neonates with convulsions. Also, there was highly statistically significant relations between the studied nurses' total knowledge and their age, educational level, and years of experience, while there was statistically significant relation between their total knowledge and job description, There was highly statistically significant relation between the studied nurses' total practice and years of experience, and there were statistically significant relations between their total score of practice and age and educational level, addition there was no statistically significant relation between nurses' total practice and their job description. There is apositive correlation between nurse's total knowledge and their practice.

Recommendations:

In the Light of the study findings, the following recommendations are suggested:

- Continuous evaluation of nurses' compliance level to identify weaknesses and strength points to be relied upon during training.
- Implement an educational program for care of neonates with convulsion.
- Relying on job training to raise compliance of neonatal nurses for care of neonates with convulsions.
- Providing updating booklets, pamphlets and boosters for nurses to upgrading their knowledge about care of neonates with convulsions.
- Replications of the study using a larger probability sample from different setting and population to generalize these findings.
- Further studies should be conducted to improve nurses' knowledge and performance regarding care of neonates with convulsions in the NICUs in other hospitals.
- Standardized nursing procedures and guidelines should be available to guide the nurses in dealing with high risk neonates in the NICUs.

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