

Nurses' Performance Regarding Care of Children with Neurological Disorders

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Abstract

Background: The term “neurologic disorder” applies to any condition that is caused by a dysfunction in part of the brain or nervous system, resulting in physical and/or psychological symptoms. **Aim:** This study aimed to assess nurses' performance regarding care of children with neurological disorders. **Research design:** A descriptive research design was used in this study. **Setting:** The study was conducted at Neurosurgery Intensive Care Unit and Neurosurgery Department in El-Demerdash hospital which affiliated to Ain Shams University Hospitals. **Research Subject:** A convenient sample of all (50) nurses. **Tools of data collection:** Two tools were used Included **I.** Interviewing questionnaire to assess nurses' knowledge regarding to care of children with neurological disorders **II.** The observational checklist to assess nurses 'practice regarding care of children with neurological disorders. **Results:** less than two thirds of the studied nurses (62%) had unsatisfactory knowledge , additional to 58% of them were having incompetent practice regarding care of children with neurological disorders. **Conclusion:** The current study concluded that, there were statistical significant relation between total nurses' knowledge, their total practice and their demographic characteristics as regards: age, position and experience. With a strong positive correlation between nurses level of knowledge and their level of practice. **Recommendation:** The study recommended that importance of implementing an educational training program for nurses in neurosurgery intensive care units and neurosurgery department regarding neurological disorders.

Key words: neurological disorders, nurses' performance, children care.

Introduction

Neurological disorder is any disorder of the body nervous system lead to abnormalities in the structural, biochemical or electrical framework of the brain, spinal cord or other nerves can result in arrange of symptoms on where damage occurs. Areas that control movement, communication, vision, hearing or thinking can be affected. Neurologic disorders are wide ranging. They have various causes, complications and outcomes. Many result in additional needs requiring life-long management (WHO, 2014).

Symptoms of neurologic disorders vary. Physical, cognitive (or thinking), emotional and behavioral symptoms may be present, with

specific disorders having combinations or clusters of these symptoms. Many neurologic disorders emerge during the early years of development and may be diagnosed at birth. Some are diagnosed later because symptoms only appear when: (a child misses developmental milestones or has developmental difficulties (e.g. autism), a damaging infection occurs (e.g. meningitis) and an accident causes brain injury (stroke, trauma, hypoxia) (Ihsan et al., 2013).

There are many causes of neurological disorders, which can be grouped as genetic, prenatal, perinatal, and postnatal. Many of the causes of neurological disorders are more common in resource-poor countries. Therefore, prevalence of neurological disability is expected to be higher in these countries in more

developed countries, advances in diagnostic techniques have aided the characterization and definition of diseases (Kumar et al., 2013).

Pediatric Neurological conditions like other neurological conditions are associated with motor impairments including muscle weakness, abnormal muscle tone, decreased joint range of motion, and decreased balance and coordination and benefit from physiotherapy. Often require a rehabilitation team approach for optimum care (Alves, 2016).

Neurological assessment is a method of obtaining specific information related to the function of a patient's nervous system. Neurologic observations allow monitoring and evaluation of changes in the nervous system that later on aid in the diagnosis and treatment, which on pediatric patient prognosis and rehabilitation (Restrepo, 2013).

Serial, consistent, and well documented neurological assessments are the most important aspect of nursing care for the pediatric neurosurgical patient. Subtle changes in the neurological assessment may first be noted by a bedside nurse. Keen observation skills and the ability to extract information about a patient's baseline level of neurological function from the parents or primary caregivers are essential. The nurse's response to assessment changes is essential to the prevention of secondary neurological sequel and other complications associated with neurological disorders (Cartwright & Wallace, 2017).

Significance of the study:

Neurological disorders in children are important causes of mortality and morbidity around the world, every year ten million children die in developing countries before they reach their 5th birthday. 20% to 40% of their deaths are due to neurological disorders (Sood et al, 2014).

Wide spectrums of neurological disorders occur and constitute a huge burden for children in Egypt (Shora et al., 2015).

It was observed from Neurosurgical Department and neurosurgery intensive care units, that Nurses Lack Skills and Knowledge Regarding neurological disorders and its care which result in dangerous complication. So it is important to conduct this study to assess nurse's knowledge and practice about the care for such group of patients.

Aim of the study

The aim of the study is to:

Assess nurses' performance regarding care of children with neurological disorders.

Research Question

The current study will answer the following questions:

What is the nurse knowledge regarding care of children with neurological disorders?

What is the nurse practice regarding care of children with neurological disorders?

Subjects and methods

This study was aimed to assess nurses' performance regarding care of children with neurological disorders.

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

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

I. Research Design

A descriptive design was used to conduct this study.

Setting

This study was conducted at Neurosurgery Intensive Care Unit and Neurosurgery Department in El-Demerdash

hospital which affiliated to Ain Shams University Hospitals.

Sample

A convenient sample of (50) nurses who were working at the previously mentioned setting (35 nurses) from Neurosurgery Unit Department and (15 nurses) from Neurosurgery Intensive Care regardless their age, level of education, and years of experiences were interviewed.

Tools of data collection

Data was collected by using the following tools:

I. Interviewing questionnaire:

It was developed by the researcher after reviewing the relevant literatures. It was written in simple Arabic language and consisted of two parts:

Part I: It was concerned with characteristics of the studied nurses, as regards their age, sex, level of education, position, years of experience, attendance of previous training program.

Part II: It was related to nurses' knowledge about anatomy and physiology of central nervous system, definition of neurological disorders, causes and common neurological disorders affecting children such as epilepsy, cerebral palsy, head trauma, hydrocephalus, brain tumor, diagnostic tests and also, their knowledge about the nursing care of children with neurological disorders.

Scoring system:

According to the responses obtained from the nurses, a scoring system was followed to assess the nurses' knowledge each question scored one grade for correct answer and zero for incorrect answer. The scores of questions were summed-up and the total scores were converted into a percent score and classified as the following:

- Less than 75% was considered unsatisfactory knowledge.

- 75% more was considered satisfactory knowledge.

II. Observational Check List: to assess nurses 'practice regarding care of children with neurological disorders

It was consisted of:

1- Glass Coma Scale it was adopted from **Teasdale and Jennet, (1974)**, to assess the nursing practices concerning their assessment for the level of consciousness among the hospitalized children and infants, it includes 3 parts assessment

- Eye opening (4 items) ranging in its score from 1-4 grades.

- Verbal response (5 items) ranging in its score from 1-5 grades.

- Motor response (6 items) ranging in its score from 1-6 grades.

Total score (15)

Severe Head Injury----GCS score of 8 or less

Moderate Head Injury----GCS score of 9 to 12

Mild Head Injury----GCS score of 13 to 15

2- Vital Signs checklist it was adopted from **Greenberg and Bowden, (2016)** to assess nurses' practice during measuring vital signs (temperature, pulse, blood pressure and respiration)

3- Skin care it was adopted from **Hickey, (2015)** to assess nurses' practice during skin care

Scoring system:

The right step was scored one, and the wrong step was scored zero. The score of steps were summed-up and the total scores were converted into a percent score and were classified as the following:

- Less than 80% was considered incompetent practices.

▪ 80% more was considered competent practices

II- Operational Design:

Preparatory phase:

This phase included reviewing of literature using books, articles, periodicals that area related to be acquainted with research problem, this served to develop the study tools for data collection, and the development of the tools was designed under supervisors' guidance.

Validity and reliability:

Content validity was ascertained by a group (3) of the experts in the field of pediatric nursing to test its content validity and applicability. Reliability was don used test-retest (0.87).

Pilot Study

Pilot study was carried out on 20% (10 nurses) of the studied nurses to test the applicability and the clarity of the constructed tools. The pilot has also, served to estimate the time needed for each subject to fill data collection tools. According to the results of the pilot, some corrections were needed. The pilot participants were not included in the main study sample.

Fieldwork

The actual field work of this study was carried out over a period of 6 months' started from the beginning of April 2018 till the end of September 2018 week. The researcher was available in the study setting two days per week in the morning shift. Each nurse was interviewed individually to gather the necessary

Results

Table (1) this table showed that, 28% of the studied nurses were in the age group 20 > 30 years old, with mean age 27.9 ± 7.9 years, meanwhile 48% of them were graduated from technical institute. The same table revealed that most (80%) of studied nurses were staff nurses

data of the study. As regards the nurses' practice, it was assessed by the researcher throughout their daily care in the study setting. The required time to collect data from each nurse about 40 -50 minutes.

III. Administrative Design

An official approval obtained through an issued letter from the Dean of the Faculty of Nursing, Ain Shams University to directors of the previously mentioned settings. The researcher then met the hospital director and explained the purpose the methods of the data collection and its' expected outcome.

Ethical consideration

The research approval obtained from the ethical committee of the faculty of Nursing, Ain Shams University before starting the study. Written approval obtained from the participant nurses before inclusion in the study. They secured that all the gathered data was confidential and used for research purpose only. The nurses informed that, they allowed to choose to participate or not in the study and they had the right to withdraw from the study at any time.

IV. Statistical design:

Data collected from the studied sample was revised, coded and entered using the Statistical Package for Social Sciences (SPSS) version 20 Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test (X^2) used for comparisons between qualitative variables and correlation coefficient was used to test correlation between quantitative variables. Statistical significant was considered at p -value < 0.05 .

and 36% of them had years of experience ranged between 5>10 with mean experience years 7.9 ± 2.1 .

The table (2) showed that 78%, 72%, 76% and 90% of the studied nurses had incorrect knowledge as regards structure of the nervous system, the brain, number of nerves in

the human brain & function of motor neurons respectively, while 68% of them had correct knowledge about the meaning of spinal cord.

The table (3) showed that more than half (52%&54%) of the studied nurses knew the definition and signs & symptoms of neurological disorders respectively, While most (82%) of the studied nurses did not know the causes of neurological disorders.

Table (4) illustrates that, there were statistical significant relation between gender, qualification, position, years of experience and attending training course of the studied nurses and their level of knowledge regarding care for children with neurological disorders $p < 0.05$, while there was statistical insignificant relation between age of the studied nurses and their level of knowledge regarding care for children with neurological disorders $p > 0.05$.

Table (5) illustrates that, there were statistical significant relation between

Table (1): Distribution of studied nurses according to their characteristics (no =50)

Items	No	%
Age in years		
>20	8	16
20 > 30	28	56
30 > 40	10	20
40 & more	4	8
Mean \pmSD		27.9 \pm 7.9
Qualification		
Bachelor	10	20
Technical institute	24	48
Diploma nurse	16	32
Position		
Head nurse	2	4
Charge nurse	8	16
Staff nurse	40	80
Experience years		
1 > 5	16	32
5 > 10	18	36
≤ 10	16	32
Mean \pmSD		7.9 \pm 2.1

qualifications, position, years of experience and attending training course of the studied nurses and their level of practices regarding care for children with neurological disorders $p < 0.05$, while there were statistical insignificant relation between gender & age of the studied nurses and their level of practices regarding care for children with neurological disorders $p > 0.05$.

Table (6) illustrates strong positive correlation ($r=0.89$) between nurse's knowledge scores and their practice scores regarding care of children with neurological disorders.

The figure 1 showed that, 54% of the studied nurses had unsatisfactory total knowledge about neurological disorders.

The Figure 2 showed that, 58% of the studied nurses were incompetent practices regarding nursing care of children with neurological disorders.

Table (2): Distribution of the studied nurses according to their knowledge about nervous system (no =50)

Nurses' knowledge regarding	Correct		Incorrect	
	No	%	No	%
Anatomical structure of nervous system	11	22	39	78
Anatomical structure of brain	14	28	36	72
Functional unit of the nervous system	23	46	27	54
Number of nerves in the human brain	12	24	38	76
Meaning of Spinal Cord	34	68	16	32
Function of motor neurons	5	10	45	90
The responsible of balance, posture and muscle tone	19	38	31	62

Table (3): Distribution of the studied nurses according to their general knowledge about neurological disorders (no =50)

Nurses' knowledge regarding neurological disorders	Correct		Incorrect	
	No	%	No	%
Definition	26	52	24	48
Causes	9	18	41	82
Signs and symptoms	27	54	23	46
The common disorders affecting children	31	62	19	38

Table (4): Relation between characteristics of the studied nurses and their knowledge regarding care for children with neurological disorders

Items	Knowledge				X2	P Value
	Satisfactory		Unsatisfactory			
	No	%	No	%		
Gender						
Male	9	69.3	4	30.7	5.59	0.02*
Female	10	27.1	27	72.9		
Age in years					2.90	0.59
>20	3	37.5	5	62.5		
20 > 30	12	42.9	16	57.1		
30 > 40	2	20.0	2	80.0		
40 & more	2	50.0	2	50.0		
Qualification					9.43	0.01*
Bachelor	8	80.0	2	20.0		
Technical institute	7	29.1	17	70.9		
Diploma nurse	4	25.0	12	75.0		
Position					9.78	0.01*
Head nurse	2	100.0	0	0.00		
Charge nurse	6	75.0	2	25.0		
Staff nurse	11	27.5	29	72.5		
Years of experience					6.99	0.03*
1 < 5	7	43.7	9	56.3		
5 < 10	10	55.6	8	44.4		
10 < 15	2	12.5	14	87.5		
Attending training courses					16.08	0.0001**
Yes	13	81.3	3	13.7		
No	6	17.6	28	82.4		

(*) Statistically significant at $p < 0.05$ (**) Highly Statistical significant difference at $p < 0.01$

Table (5): Relation between characteristics of the studied nurses and their total practices regarding care for children with neurological disorders

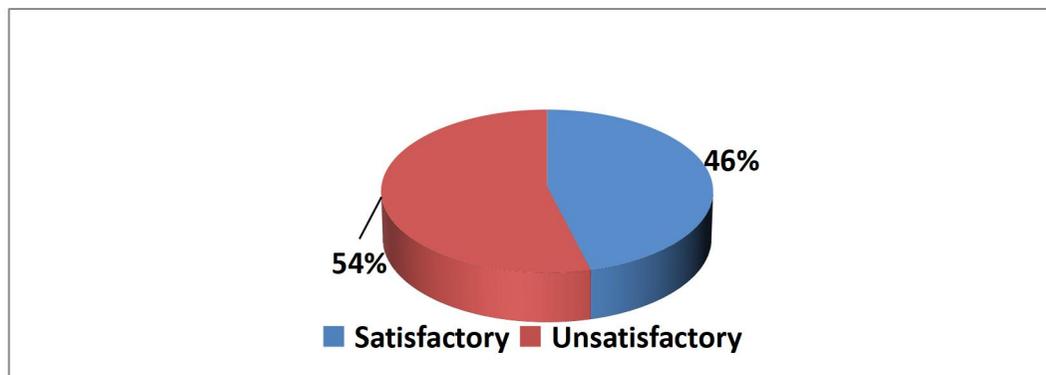
Items	Practice				X2	P Value
	Competent		Incompetent			
	No	%	No	%		
Gender						
Male	8	61.5	5	38.5	1.77	0.18
Female	13	35.1	24	64.9		
Age in years						
>20	3	37.5	5	62.5	0.71	0.86
20 < 30	8	50.0	8	50.0		
30 < 40	5	41.7	7	58.3		
40&more	5	30.0	9	70.0		
Qualification						
Bachelor	8	80.0	2	20.0	14.95	0.001**
Technical institute	12	50.0	12	50.0		
Diploma nurse	1	6.3	15	93.7		
Position						
Head nurse	1	50.0	1	50.0	8.33	0.01*
Charge nurse	7	87.5	1	12.5		
Staff nurse	13	32.5	27	67.5		
Years of experience						
1 < 5	4	25.0	12	75.0	14.9	0.001**
5 < 10	14	87.5	4	12.5		
10 < 15	3	18.8	13	81.2		
Attending training courses						
Yes	12	75.0	4	25.0	8.62	0.003**
No	9	26.4	25	73.6		

(*) Statistically significant at $p < 0.05$ (**) Highly Statistical significant difference at $p < 0.01$

Table (6): Correlation between nurses level of knowledge and their level of practice regarding care for children with neurological disorders (no=50)

Item	Knowledge	
	r	P Value
Practices	0.89	0.001**

(**) Highly Statistical significant difference at $p < 0.01$

**Figure (1):** Distribution of the studied nurses according to their total knowledge about neurological disorders (n =50)

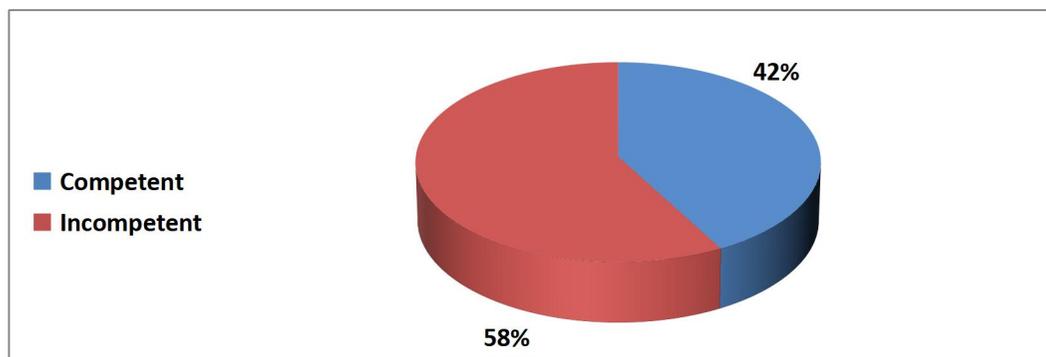


Figure (2): Distribution of the studied nurses according to their total practices regarding nursing care of children with neurological disorders (n =50)

Discussion

This study aimed to assess nurse's performance regarding care of children with neurological disorders. The finding of the current study revealed that more than half of the studied nurses were in the age group 20>30 years with mean age 27.9 ± 7.9 years. This finding was contraindicated with finding of **Upadhyay et al. (2011)** who conducted a study entitled "seizures in newborn and children" and reported that about one quarter of the studied group were in the age group 25-30 years old.

The results of the present study showed that about three quarters of the studied nurses were females and more than one third of them had 5 >10 years of experience. These results were consistent with results of **Jaddoua et al. (2013)**, who carried out a study entitled "assessment of nurses' knowledge concerning Glasgow coma scale in pediatric neuro-surgical wards" and mentioned that three quarters of the studied group were females and one third of them had more than 5 years of experience.

As regards the knowledge of the studied nurses about the nervous system, the results of current study illustrated that the majority of the studied nurses answered incorrectly about the function of the motor neurons and three quarters of them answered incorrectly about the constructions of the brain and the number of nerves in the human brain. Moreover only one third of the studied nurses had satisfactory total knowledge about the nervous system. These

results were in the same context with results of **Teles et al. (2013)**, who carried out a study entitled " Effectiveness of Self-instructional Module on Knowledge and Skills regarding use of Glasgow coma scale in Neurological Assessment among Nurses working in Critical Care units "and mentioned that the majority of the studied sample did not know the function of motor neurons and the number of nerves in human brain and about one third of them had satisfactory total knowledge about the nervous system.

The findings of the current study revealed that more than half of the studied nurses answered correctly about definition and signs & symptoms of the neurological disorders, in addition more than half of them had unsatisfactory total knowledge about neurological disorders. These findings were not similar to results of **Nguyen and Sun-Mi, (2011)**, who conducted a study entitled "Assessment of neurological nursing practices with acute stroke pediatric patients " and reported that the vast majority of the nurses responded correctly to questions regarding their basic knowledge about the neurological disorders including the definition and symptoms & signs, however regarding the total knowledge of the studied nurses about the neurological disorders, more than half of them had satisfactory total knowledge.

The results of the present study showed that there was a statistical significant difference between studied nurses' characteristics namely; gender, qualification, position, years of

experience and attending training course and their level of knowledge regarding care of children with neurological disorders. Moreover there were statistical significant difference between studied nurses 'qualification, position ,years of experience and attending training course and their level of practices regarding care of children with neurological disorders, with a strong positive correlation between nurses level of knowledge and their level of practices. These results were in agreement with the results of **El-Sharkawi, (2016)**, who studied results attitudes and practice of nurses towards children with epilepsy and reported that there was a positive correlation between nurses level of knowledge and their practices regarding children with neurological disabilities. Moreover there were statistical significant differences between qualification, years of experience and attending training course of the studied group and their practices.

Conclusion

Based on the finding of the current study, it can be concluded that less than two thirds of the studied nurses had unsatisfactory knowledge and more than half of them were incompetent practices regarding care of children with neurological disorders, (with a strong positive correlation between nurses level of knowledge and their level of practices). Moreover, there were statistical significant differences between some characteristics of nurses (age, gender, qualification, and years of experience) and their total knowledge & total practice regarding care of children with neurological disorders.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

- Importance of implementing an educational training program for nurses in neurosurgery intensive care units and neurosurgery department regarding neurological disorders in children.

- Orientation programs for newly recruited nurses who work in neurosurgery intensive care units and neurosurgery department is recommended.

- Availability of booklets and educational materials to facilitate self-developments for nurses caring for children with neurological disorders.

- The study should be replicated on large sample and in different hospital setting in order to generalize the results.

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