

Assessment of Nurses' Performance for Patient with Spinal Cord Injury

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Abstract

Background: A spinal cord injury (SCI) is the damage of the tight bundle cells and nerves that sends and receives signals from the brain to and from the rest of the body. This damage could result temporary or permanent changes in sensation, movement, strength, and body functions below the site of injury. Nursing assessment of spinal cord injury is an integral part of nursing care. **Aim:** This study aimed to assess nurse's performance for patient with spinal cord injury. **Design:** A descriptive explorative design was utilized for the conduction of this study. **Setting** the study was carried out in General intensive care unit at El demrdash Hospital. Ain shams university hospitals. **The sample of the study.** A convenient sample of thirty five nurses. **Tools for Data collection.** **Tool (I) Self-administered Questionnaire:** First part: it is concerned with the characteristics of nurses under study such as age, gender, educational level, years of experience. Second part: It was concerned with the assessment of nurses' level of knowledge regarding to care of patient with spinal cord injury. **Tool (II) Nurses' practice observational Checklist (Appendix II).** It is concerned with the assessment of the nurses' practice regarding care of patient with spinal cord injury. **Tool (III) Nurse's attitude Likert scale toward care of patient with spinal cord injury (Appendix III).** It is concerned with assessment of the nurse's attitude toward caring of patient with spinal cord injury. **Results:** The main results revealed that: mean age of the studied nurses was 29.2 ± 7.2 years, while 54.3% of the studied nurses were females and 60% of them were technical institute nursing graduates and reported that no availability of manual /booklet regarding care of patient with spinal cord injury. Also, (71.4%) of the studied nurses had unsatisfactory level of knowledge and (82.9%) of them got unsatisfactory practices regarding care of patients with spinal cord injury respectively. While, (94.3%) of them had negative attitude toward caring of patient with spinal cord injury. **Conclusion** based on the findings of the current study, it can be concluded that majority of the nurses were got unsatisfactory knowledge, practice and negative attitude regarding care of patient with spinal cord injury. **Recommendations:** Develop and implement an educational program regarding care of patient with spinal cord injury based on the nurses' needs.

Key words: Assessment, nurses' performance, Spinal cord injury.

Introduction:

Spinal cord injury (SCI) is the damage to the spinal cord that results in a loss of function such as mobility or feeling. The effects of SCI depend on the type and level of the injury. Before World War II, most people who sustained SCI died within weeks of their injury due to respiratory problems. According to the National Spinal Cord Injury Statistical Center, there are 12,500 new cases of SCI each year in North America. Etiologically, more than 90% of SCI cases are traumatic and caused by incidences such as traffic accidents and falls

(Alizadeh et al., 2019; Curtis & Ramsden, 2019).

Nurses are an integral part of the spinal cord injury management team. The nurse's role is important in supporting the patient by explaining what is happening, in terminology that is easy to understand. The nurse should perform primary and secondary assessments of patients, while simultaneously performing interventions to stabilize the airway, breathing, and circulation. All patients with significant mechanisms of injury must be suspected of

having a spinal injury and should be completely immobilized. Spinal protection involves manual immobilization of the patient's head, until a rigid cervical collar and a backboard are applied (*Khan et al., 2017; Emergency Nurses Association, 2019*).

Nurses play an important role in improving health standards. Hence, they need to be updated about theoretical and practical knowledge in this field. One of the factors contributing to greater involvement of the staff in such programs is the utilization of adult learning principles (*Chaghari et al., 2017*).

Significance of the study

Spinal cord injuries are increasingly recognized as a global health priority. Worldwide, SCIs have a considerable impact in terms of mortality and morbidity, and represent a relevant burden for healthcare systems due to the expensive and complex medical support required for patients with SCI. Traffic crashes, and falls, are among the most common causes of injury-related worldwide (*Barbiellini et al., 2022*). There is no doubt that spinal cord injury is a major catastrophic event. Effective nursing care is the hidden key for patient recovery. Nurse is likely to be the first one to detect problems of such group of patients. Nurse's care competency influences directly by the quality of nursing care provided. Therefore, it is necessary to assess nurses' performance for patient with spinal cord injury.

Aim of the study:

This study aims to assess nurse's performance for patient with spinal cord injury. It will be achieved through:

- 1- Assess nurse's level of knowledge regarding care for patient with spinal cord injury.
- 2- Assess nurse's level of practice regarding care for patient with spinal cord injury
- 3- Assess nurse's level of attitude toward care of patient with spinal cord injury.

Research question:

The current study answered the following question:

- 1-What is nurse's level of knowledge regarding care of patient with spinal cord injury
- 2-What is nurse's level of practice regarding care of patient with spinal cord injury
- 3- What is nurse's level of attitude toward caring of patient with spinal cord injury?

Subjects and Methods

The study was portrayed under the four main designs as follows:

- I. Technical design.
- II. Operational design.
- III. Administrative design.
- IV. Statistical design.

I. Technical design:

The technical design includes research design, setting, subjects and tools for data collection.

Research Design:

A descriptive exploratory design was utilized for the conduction of this study.

Setting of the Study:

This study was conducted at the General Intensive Care Unit (ICU) at El-dermdash Ain Shams University Hospitals. The ICU located at the 1st floor in the hospital building. It was distributed into three wings, first wing contains 12 beds, second wing contains 12 beds, and the third unit contains 8 beds. There is an isolation room contains 8 beds with total number of 40 beds, receiving different types of patients including (intracerebral hemorrhage, polytrauma, spinal cord injury, traumatic brain injury and respiratory failure) that's why the researcher select this setting to conduct the current study

Subject:

Convenient sample of all available nurses (No=35 nurses), who are working in the previous mentioned setting and accepted to

participate in the study from both gender with different qualifications, age, training courses and years of experiences.

Data Collection tools

Data were collected using the following tools:

I. Self-administered Questionnaire:

The researcher developed it in Arabic language to assess nurses' level of knowledge regarding care of patient with spinal cord injury after reviewing the recent related literature. It included two parts:

First part: It was concerned with the characteristics of nurses under study such as age, gender, educational level, years of experience and attending previous training courses related to care of patient with spinal cord injury.

Second part: It was developed by the researcher guided by *Paul et al., 2016; Urden et al., 2017; Burns and Delgado, 2019; Chulay et al., 2019*; It was concerned with the assessment of nurses' level of knowledge regarding to care of patient with spinal cord injury. It included 56 questions in the form of multiple-choice and true/false questions. It was categorized into three sections as follows; section (I): it is concerned with the assessment of nurses' knowledge regarding the anatomical structure and function of spinal cord. It included six items; section (II): It is concerned with the assessment of nurses' knowledge regarding spinal cord injury including its definition, types, risk factors, causes, signs and symptoms, complications, diagnosis and management. It included 25 items.

II. Nurses' practice observational Checklist: It was concerned with the assessment of the nurses' practice regarding care of patient with spinal cord injury. It was adapted and modified by the researcher from *Perry et al., 2019; Stein and Hollen, 2020; Lister et al., 2021 ;Perry et al., 2021*. It consists of nursing assessment, nursing interventions and nursing measures to avoid complications for patient with spinal cord injury. It includes checklist namely; primary

and secondary survey (39 steps), vital signs monitoring (5 steps), neurological assessment (orientation, GSC, sensory, motor assessment and deep tendon reflexes 24 steps), cardiac monitoring (9 steps), oxygen therapy (14 steps), endotracheal suction and care (29 steps), nasogastric feeding and care (29 steps), mobilization and skin care (5 steps) and nursing measures to avoid complications (15 steps).

❖ Scoring system:

For Nurses' observational Checklist; the step observed to be done correctly was scored by one grade and the step not done or incorrectly done was scored zero, with total score 169 grades. The level of practice was considered satisfactory if the percentage was $\geq 90\%$. The level of practice was considered unsatisfactory, if the percentage was $< 90\%$ considered unsatisfactory. As all parts of the procedures, consider as life threatening for such group of patients.

III Nurses attitude Likert scale toward caring of patient with spinal cord injury it was concerned with assessment of the nurse's attitude toward care of patient with spinal cord injury. It was developed in Arabic language to assess nurses' attitude toward caring of patient with spinal cord injury after reviewing the recent related literature (*Abdoh et al., 2017; Al-Othman et al., 2018*). It consists of 16 statements that is reflect nurses feeling and reactions toward caring of patient with spinal cord injury and nurses' responses is grading according to Likert scale (agree, neutral and disagree).

❖ Scoring system

For Nurses' attitudes Likert scale toward caring for patient with spinal cord injury consisted of 16 statements including 14 statements reflect positive attitude and two statements reflect negative attitude, the 3 point Likert scale responses was ranged as 2 for (agree), 1 for (neutral), and 0 for (disagree). The score of statements were summed up and given a total score for nurses' attitude and categorized into two categories as the following; if the

percentage $\geq 60\%$ reflect positive attitude. If the percentage $< 60\%$ reflect negative attitude.

II. Operational design:

The operational design includes preparatory phase, validity and reliability, pilot study, ethical consideration and field of work.

Preparatory phase:

Validity and reliability

The validity of the developed tools was tested using (face and content validity). Face validity aimed to inspect the items to determine whether the tools measure what it supposed to measure, while content validity was done to determine whether the tool achieve the study aim

Validity was tested through a jury of seven experts from Ain shams university (7 professors of critical care nursing and medical surgical nursing). The experts reviewed the tools for clarity, relevance, comprehensiveness, and simplicity, minor modification were done, and to estimate time need to fill in the study tools.

Pilot study

It was carried out on (10%) of total the sample of the studied nurses to test applicability, clarity and efficiency of the tools. According to the results obtained from analysis with minimal modification were done, so the nurses' who included in the pilot study were included in the study sample

The ethical research considerations in the study included the following:

The ethical consideration in the current study includes the following: The research approval was obtained from scientific research ethical committee in faculty of nursing Ain Shams University before stating the study. The researcher clarified the aim, objectives of the study to the nurse's included in the study prior to data collection. Maintaining anonymity and confidentiality had been guaranteed. Nurses

were informed that they allowed choosing to participate or not in the study and that, they had the right to withdraw from the study at any time. Ethics, values, culture, and beliefs were respected during study period.

Fieldwork:

An approval was obtained from hospital directors and nursing directors. The aim of the study was explained to the nurses who agreed to participate in the study prior to data collection. The actual work of this study took about 2 months, started from the beginning of November 2021 to the end of December 2021. The data were collected by the researcher through 3 days/week (Monday, Wednesday and Thursday) during morning and afternoon in the previously mentioned setting.

The researcher observed the performance of each nurse during care of patient with spinal cord injury by indirect observation to ensure the maximal realistic observations of nurses' practice and minimize the possibility of bias, then self-administered questionnaire and attitude Likert scale completed, and it took about 30 minutes.

Result:

Table (1): shows that, (51.4%) of the studied nurses were between the age group 20 to less than 30 years with mean age 29.2 ± 7.2 years, and 54.3% of them were females. Meanwhile, 60% of the studied nurses were technical institute nurses, 42.9 % of them had previous experience less than 5 years with mean years of experience 8.5 ± 3.8 . Moreover, 20% of the studied nurses attended previous training courses regarding spinal cord injury care, and reported that no availability of manual /booklet regarding care of patient with spinal cord injury.

Table (2): the table showed that 71.4 % of the studied nurses got unsatisfactory level of knowledge regarding care of patient with spinal cord injury.

Table (3): demonstrated that 100% of the studied nurse's attitude was neutral toward providing nursing care for patients with spinal

cord injury, and disagreed regarding the possibility of patient with spinal cord to live normally.

Table (4): the total satisfactory level of practice of the studied nurses regarding care of patient with spinal cord injury was 17.10

Table (5): showed that, there was no statistically correlation between the studied nurse's level of knowledge, practice and attitude regarding care of patient with spinal cord injury with ($r=0.066$, $P>0.707$), ($r=0.155$, $P<0.373$), & ($r=0.332$, $P<0.051$) respectively.

Table (1): Number and percentage distribution of the studied nurses according to their demographic characteristics (N=35).

Demographic data	N	%
Age (years)		
20 - < 30	18	51.4
30 - < 40	13	37.1
≥ 40	4	11.4
Range (Years) (Minimum – Maximum)	20 – 46	
Mean ±SD	29.2 ±7.2 years	
Gender		
Male	16	45.7
Female	19	54.3
Educational Level		
Diploma	7	20.0
Technical	21	60.0
Bachelor	7	20.0
Experience (Years)		
1 - < 5	14	40.0
5 - < 10	11	31.4
≥ 10	10	28.6
Range (Years) (Minimum – Maximum)	1 – 23	
Mean ±SD	8.5 ±3.8 years	
Attending Previous training regarding spinal cord injury care		
Yes	7	20.0
No	28	80.0
Availability of manual/booklet regarding care of patient with spinal cord injury		
Yes	0	00.0
No	35	100

Table (2): Percentage distribution of studied nurse's according to their level of knowledge for patient with spinal cord injury (N=35).

Items related to knowledge	Unsatisfactory		Satisfactory	
	N	%	N	%
Structure and Function of spinal cord	31	88.6	4	11.4
Spinal Cord Injuries	28	80.0	7	20.0
Risk factors of spinal cord injuries	22	62.9	13	37.1
Causes of spinal cord injuries	26	74.3	9	25.7
Signs and Symptoms	25	71.4	10	28.6
Complications of spinal cord injury	30	85.7	5	14.3
Diagnosis of spinal cord injury	21	60.0	14	40.0
Medical & Surgical treatment	19	54.3	16	45.7
Nursing care of patient with spinal cord injury	24	68.6	11	31.4
Total Knowledge	25	71.4	10	28.6

Table (3): The studied Nurse's level of attitude toward care of patient with spinal cord injury

Nurses attitude	Disagree		Neutral		Agree	
	N	%	N	%	N	%
Providing nursing care for patients with spinal cord injury	0	0.0	35	100.0	0	0.0
Importance of sharing knowledge and experience with colleagues who care for patients with spinal cord injury	2	5.7	27	77.1	6	17.1
nurses caring of patient with spinal cord injury must be provided with the necessary knowledge and skills of high quality of care	0	0.0	31	88.6	4	11.4
Neurological examinations for the patient has a positive effect on the patient's recovery	8	22.9	12	34.3	15	42.9
Explanation of nursing procedures for patient with spinal cord injury during care reduces patients' anxiety	0	0.0	31	88.6	4	11.4
Importance of providing nursing care despite of sustainability of infection	21	60.0	9	25.7	5	14.3
The time factor is important during critical phase for patient with spinal cord injury	4	11.4	11	31.4	20	57.1
Importance of immediate nursing care which should be provided for patients with spinal cord injury	2	5.7	12	34.3	21	60.0
Importance of initiating first aid for patient with spinal cord injury	0	0.0	33	94.3	2	5.7
Considering patient's culture while providing nursing care	3	8.6	10	28.6	22	62.9
Patient with spinal cord injury need nursing attention as it could avoid permanent disability.	35	100.0	0	0.0	0	0.0
Patient with spinal cord injury need support from the medical staff and their family	1	2.9	26	74.3	8	22.9
Patients with spinal cord injury could live normally.	35	100.0	0	0.0	0	0.0
The level of care provided to person with the spinal cord injured could affect the level of recovery	34	97.1	0	0.0	1	2.9
The patient with spinal cord is a hopeless case	1	2.9	4	11.4	30	85.7
Recovery prospect should not be given to the family of patient with a spinal cord injury	2	5.7	1	2.9	32	91.4

Table (4): Number and distribution of the total nurses' Attitude toward care of patient with spinal cord injury .

Total nurses' attitude	Negative attitude		Positive attitude	
	N	%	N	%
	33	94.3	2	5.7

Table (5): Percentage distribution of the studied nurse's level of practice for patient with spinal cord injury (N=35).

Items related to practice	Unsatisfactory		Satisfactory	
	N	%	N	%
Primary survey	34	97.1	1	2.9
Secondary survey	35	100.0	0	0.0
Vital signs measurement	14	40.0	21	60.0
Assisting in neurologic assessment	35	100.0	0	0.0
Cardiac monitoring total	12	34.3	23	65.7
Oxygen administration via /mask	33	94.3	2	5.7
Tracheal Suctioning procedure	34	97.1	1	2.9
Nasogastric Feeding procedure	32	91.4	3	8.6
Nasogastric tube care	34	97.1	1	2.9
Mobilization and Skin care	22	62.9	13	37.1
Nursing measures to avoid complications	33	94.3	2	5.7
Total level of practice	29	82.9	6	17.1

Table (5): Correlation between the total knowledge, practice and attitude of the studied nurses N= (35).

Items	Knowledge		Attitude	
	r	P	r	p
Knowledge			0.155	0.373
Practice	0.066	0.707	0.332	0.051

Discussion:

The discussion of the findings covered main parts:

Part 1: Concerning the studied nurses' demographic characteristics, the results of the current study revealed that, half of the studied nurses were at the age group from 20 to less than 30 with mean age 29.2 ± 7.2 years. This finding could be clarified in the light of the nature of ICU as an area of specialty necessitates a young qualified nurse for better quality of nursing care offered and ability to tolerate the working load.

The previous finding is consistent with *Maarouf, (2012)* who studied nurses' performance for patients with traumatic head injury in golden hour and stated that about two thirds of the studied nurses age were less than thirty years old.

As regard gender of studied nurses, the current study showed that more than half of studied nurses were females. This result may be due to the old belief that nursing is profession for females so utmost of nurses in Egypt are females.

This is consistent with *AL-Gabri et al., (2020)* in a study titled "Factors Affecting Nurses Compliance Regarding the Care of Patients with Chest Trauma", and stated that more than two thirds of the studied nurses were females. This finding went in the opposite line with *Ahmed et al., (2017)* in a study titled "Nurses Knowledge and Practice of Trauma Patients during Golden Hours of Care" and reported that more than half of study subjects were males.

Concerning level of education, the results of this study revealed that about two thirds of studied nurses graduated from technical institute. This finding may be due to a shortage of number of bachelor nurses working in intensive care units. So, technical institute nurses were recruited there.

The previous finding is supported by a study conducted by *Shehab, et al. (2018)*, which titled "Impact of an Educational Program on Nurses' Knowledge and Practice Regarding Care of Traumatic Brain Injury Patients" and stated that the majority of the studied nurses in intensive care unit were technical institute nurses.

Concerning years of experience, the present study revealed that more than two fifths of the studied nurses had previous experience from 1 to less than 5 years, and one third of the them had previous experience 5 to less than 10 years with mean years of experience 8.3 ± 6.9 .

The previous finding in the same line of a study done by *Abd Aziz, (2014)* about the effect of educational program on nurses' knowledge and skills about oral care for traumatized patients and found that more than two thirds of studied nurses had experience 1 to less than 5 years of experience.

Concerning previous training courses regarding care of spinal cord injury found that the most of the studied nurses did not attend any courses regarding care for patients with spinal cord injury. This may be due to lack of in-service educational programs inside the hospitals and continuous shifting of nurses and overload roster. So, they had not the opportunities to attend training courses during working hours. This is in accordance with these findings supported by *Mohammed et al., (2015)* and stated that the majority of nurses did not receive any training programs.

One of the main indicators of the nursing care quality in the health centers is improving patient outcomes and prevention of complications. Therefore, the nurses should have the proper knowledge and performance about how to care of patient with spinal cord injury in order to offer competent patient care.

This part will discuss finding related to level of knowledge among studied nurses regarding care of patient with spinal cord injury, as regards to nurses' total satisfactory level of knowledge, the present result showed that two thirds of the studied nurses had total unsatisfactory level of knowledge regarding care of patients with SCI. from the researcher point of view, this result may be due to that the majority of nurses were recently graduated and didn't attend training courses related to care of patient with SCI. This is consistent with *Khalil et al. (22)* whose study revealed that most of the studied nurses had low level of total knowledge regarding care for patients with SCI.

Concerning the total level of practice, the current study revealed majority of the studied nurses showed unsatisfactory practice level. This is due to inadequate staff orientation and training; this was in accordance with study findings by *Samir et al. (2021)* whose study "Nurses' Knowledge and Practice Regarding Care for Patients with Spinal Cord Injury in the Critical Care Unit" and stated that half of the studied nurses showed total unsatisfactory practice regarding caring for patients with spinal cord injury in critical care unit.

Regarding the total level of attitude, the current study revealed that that majority of the studied nurse's exhibits negative attitude toward care of patient with spinal cord injury. This is in accordance with *Naga et al., (2021)* who study the effect of competency-based program on nurses' knowledge, skills and attitude toward the care of patients with stroke and found that majority of the studied nurses demonstrated negative attitude toward care patient with stroke. **Correlation between the studied nurse's level of knowledge, practice and attitude.** there were no statistically significant correlations between total level of knowledge, practices of the studied nurses and attitude. This is due to majority of the studied nurses don't attend previous training courses about spinal cord injury care. This is in agreement with *Naga et al., (2021)* which found insignificant weak correlation was found between the studied nurses' knowledge and skills, and attitude.

Conclusion:

Based on the result of the current study; it can be concluded that: about three fifths of the studied nurses got unsatisfactory knowledge and majority of them got unsatisfactory practice and minority of them had positive attitude toward caring of patient with spinal cord injury

Recommendation:

Development and implementation of an educational program regarding care of patient with spinal cord injury based on nurses' needs.

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