Effect of Video Assisted Teaching Program on Nurses' Performance regarding the Care of Patients with Spinal Cord Injury

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Abstract

A spinal cord injury occurs when the communication between the brain and the rest of the body is disrupted, causing loss of movement and feeling below the level of injury**. The aim was to** determine the effect of video-assisted teaching program on nurses' performance regarding the care of patients with spinal cord injury. **Subjects and method: Design:** A quasi-experimental research design was used to conduct the current study. **Setting:** the study was conducted at the general intensive care unit and neurological intensive care unit in Suez Canal University hospital. **Subjects**: A purposive sample of 50 nurses was included in the study. **Three tools were used:** Two tools were used for data collection were 1) Nurses self-administered questionnaire sheet. It included two parts. part one is concerned with the assessment of the demographic characteristics of the studied nurses and part two is concerned with nurses' knowledge questionnaire regarding caring for patients with spinal cord injury.2) Nurses' observational checklist about nursing performance for patients with spinal cord injury to assess nurses' performance. **Results**: There were highly significant improvements in nurses' knowledge and performance regarding spinal cord injury pre and post-video-assisted teaching program (P=0.005). The results of the present study revealed that there was a positive significant correlation between nurses' knowledge and their performance level regarding caring for patients with spinal cord injury pre and post-video-assisted teaching program. **Conclusion:** The current study concluded that video-assisted structured teaching program had a highly significant positive effect on improving nurses' performance regarding the care of patients with spinal cord injury. **Recommendations:** Application of video-assisted structured teaching program for nurses working with spinal cord injury patients at intensive care unit to improve their performance.

Keywords: Nurses' Performance, Patients with Spinal Cord Injury, Video-Assisted Teaching program.

Introduction:

Spinal cord injury (SCI) is a disconcerting and distressing experience that has an impact on a patient's physical, psychological, and social well-being**.** The highest frequencies were found in the United States (906 per million), while the lowest was found in Fiji (10.0 per million) and Spain (8.0 per million). The most common cause of SCI was traffic accidents, particularly motorcycle accidents, followed by falls in the elderly population **(Singh, 2019)**.

Because the spinal cord is the organ that communicates between the brain and the rest of the body, spinal cord injury disrupts nerve pathways and can result in major health problems. Respiratory, thermal, musculoskeletal, circulatory, urine, and bowel sphincter functions, as well as sexual activity, may be impaired in people with this sort of injury **(Bauman and McCourt, 2016).** Patients' bodies and lives frequently change abruptly, making self-care difficult to undertake. This can be a significant obstacle to living an independent life daily **(Holmlund, et al., 2017).**

Damage to any segment of the spinal cord or nerves at the end of the spinal canal, known as a spinal cord injury, can result in permanent alterations in strength, sensation, and other body functions below the injury site. Many research studies are currently underway all around the world, but in the meantime, therapies and rehabilitation enable many people

with spinal cord injuries to live productive, independent lives **(Chhabra, 2015).**

Full and incomplete spinal cord injuries exist. In a complete injury, the cord has no function below the degree of injury. There are no sensations or movements that are voluntary. There is some function below the level of injury with an incomplete injury, which indicates that the ability of the spinal cord to transfer signals to or from the brain is not fully lost. The lack of motor and sensory function below the injury site does not necessarily imply that there are no intact axons of nerves crossing the injury site; it just means that they are not functioning properly as a result of the trauma **(Burns, 2014).**

There are various types of injuries based on the location of the spinal cord injury, such as cervical injury (C1-C8) that causes paralysis in both arms and legs, thoracic injury (T1-T12) that causes paralysis or weakness of both legs, and loss of bowel and bladder function, lumbar injury (L1-L5) that causes paralysis or weakness of both legs, bowel, bladder, and sexual dysfunction, and sacral injury (S1-S5) that causes loss of bowel **(Urden & Stacy, 2016).**

Falls, diseases like polio or spinal bifida (a disorder characterized by incomplete development of the brain, spinal cord, and its productive covering), motor vehicle accidents, and assaults, among other things, can cause spinal cord injury if the spine is weak due to another condition, such as arthritis **(Alderson & Ravichandran, 2016).**

Neurological examination, CT scan or MRI of the spine, or spine x-rays are used to identify the extent of spinal cord injury. Loss of movement, loss or altered sensation, including the ability to heat and cold, loss of bladder control, exaggerated reflex activities or spasm, changes in sexual function, pain and difficulty breathing, coughing or clearing secretion from your lungs are all signs and symptoms of a spinal cord injury **(Catalano, 2019).**

Immediate treatment to avoid long-term effects, in some circumstances, surgery to stabilize the bones of the spine may be recommended to minimize long-term damage; however, surgery does not always reduce or restore nervous system injury. There may be a need for bed rest for the spine to heal after an acute spinal cord injury, as well as physical therapy, occupational therapy, and other rehabilitation interventions. There is currently no cure for spinal cord injury, but researchers are working on advanced techniques that have resulted in less damage at the time of injury **(Urden & Stacy, 2016).**

To provide a baseline for ongoing care, accurate assessment and recording of the spinal injury, including motor and sensory function, is critical, and this guideline lays out the necessary assessments and data collection parameters. The terrible effects of SCI are well recognized to the general population, thus delivering accurate information to patients and their relatives about the process of care should be done as soon as possible. However, an accurate prognosis, whether pessimistic or optimistic, can be devastating **(John, 2020).**

Nurses could benefit from video-based training to help them expand and refine their existing skills and knowledge, resulting in better patient care. As new approaches to providing continuing education, online learning, and video-assisted teaching modules have emerged **(Safwat & Khorais, 2018).**

Lectures, demonstrations, discussions, self-education, and video-assisted teaching methodologies are some of the methods utilized to improve nurses' knowledge and practice. Electronically collecting, recording, storing, transmitting, and rebuilding a sequence of images representing scenes in motion is known as video technology. It also aids over time because images convey without the use of words **(Balasubramanian et al., 2018).**

The video teaching approach encourages nurses to learn because it employs sight, sound, and action to provide simple explanations of complex themes and concerns. It can also give the material in ways that verbal descriptions or speech alone cannot, as well as serve as a link between educational institutions. The film, on the other hand, will be beneficial to nurses who have difficulty reading **(Devi et al., 2019).** Furthermore, video-assisted surgery is one of the most important emerging technologies for nurses, especially those who have had to undertake difficult procedures. The ability to

hear the broadcaster's voice is a benefit of video-based teaching **(Hassan, 2018).**

A spinal cord injury patient's interdisciplinary team of treatment includes nurses, physicians, psychologists, therapists, and nutritionists. Understanding the care management required for populations with acute or chronic illnesses, as well as conditions that cause disability, is one of the nurses' specialties, to assist patients in these vulnerable populations in regaining as much function as possible or managing new disabilities **(Camicia et al., 2014).**

Providing optimum care for patients is an important role for nursing staff in addition to learning patients and family members (caregivers) about the physiologic changes that occur as a finding of a traumatic spinal cord injury. Moreover, information and awareness of such changes should be addressed during the care process since nurses usually being to bladder and bowel management of care early in the process **(Reynolds, et al., 2018).**

The Association of Rehabilitation Nurses (2019) recommends that nurses with this specialty training be used to facilitate care for people with disabilities, in addition to providing information to families and caregivers about available options and services, and to support and simplify the discharge transition process to promote quality outcomes and cost-effective care for people with disabilities **(Arif et al., 2015).**

Significance of the study:

Every year, between 250 000 and 500 000 persons worldwide suffer from a spinal cord injury, but the precise number is unknown. The annual global incidence is expected to be between 40 and 80 cases per million people **(WHO, 2019).** The nurse gives the client and family care, education, and support. The goal of care is to assist disabled patients, their families, and their communities in developing self-care abilities **(Khan, et al., 2017).**

The use of video teaching methods in education can be a simple and unique way for nurses to become more involved in their patients' care. Video teaching is a powerful educational tool that blends theory and practice **(Devi et al., 2019). Hence,** the study was aimed to determine the effect of video-assisted teaching program on nurses' knowledge and performance regarding the care of patients with spinal cord injury

The study aim:

To determine the effect of video-assisted teaching program on nurses' performance regarding the care of patients with spinal cord injury through:

- Assessing the level of nurses' knowledge regarding care of patients with spinal cord injury

- Assessing the level of nurses' performance regarding the care of patients with spinal cord injury

- Designing and implementing video-assisted structured teaching program regarding the care of patients with spinal cord injury based on the patients' actual needs.

- Evaluating the effect of video-assisted teaching program on nurses' performance regarding the care of patients with spinal cord injury.

Research hypothesis:

Video-assisted structured teaching program for nurses will positively affect their performance regarding the care of patients with spinal cord injury.

Subjects and Methods:

Research design:

A quasi-experimental research design was used to conduct the current study.

Setting:

The study was conducted at the general intensive care unit and neurological intensive care unit in Suez Canal University hospital.

Subjects:

Sample size:

A purposive sample of 50 nurses was included in the study who cared for patients with spinal cord injury.

Sample technique:

The study was carried out using a non-probability purposive sampling technique.

Sample size calculation:

The study "Assessment of Nurses' Knowledge and Practice Regarding Care for Patients with Spinal Cord Injury in the Critical Care Unit" by **Ahmed et al., (2021)** used a sample of 50 nurses and found that this sample was effective. Based on this, the sample size was estimated with a power of 70%, a margin of error of 5%, and a confidence interval of 95%. The determined sample size was 50 nurses.

Data collection tool:

Tool (1): Nurses self-administered questionnaire sheet: It was used to assess nurses' level of knowledge regarding caring for patients with spinal cord injury. It was written in the Arabic language to suit all the educational levels of the studied nurses: it was filled by the studied nurses themselves .this tool was developed by the researcher based on a review of relevant recent literature and it included two parts:

Part one: It is concerned with the demographic characteristics of the studied nurses such as age, gender, academic qualification, years of experience, previous training courses, and working unit.

Part two: It is concerned with nurses' knowledge regarding caring for patients with spinal cord injury. It was used to assess nurses' level of knowledge regarding definition, types, signs and, symptoms, component of neurological assessment, nursing care measures of the spinal cord injury. It was developed by the investigator in the Arabic language based on reviewing of scientific literature **(Catalano, 2019; Singh, 2019; Holmlund, et al., 2017)**. It consisted of 36 questions in the form of multiple-choice questions (MCQ) is divided into 6 parts, which included questions about definition of spinal cord injury (1 item), anatomy and Physiology of spinal cord injury (9 items), risk factors of spinal cord injury (1 item)**,** causes of spinal cord injury (1 item), sign and symptoms of spinal cord injury (1 item), complication of spinal cord injury (3 items), and care of spinal cord injury (14 items)**.**

Scoring system for nurses' knowledge:

After completing the interviewing questionnaire, the scoring method for nurses' knowledge was evaluated by comparing the nurses' knowledge to a model key response. As a result, correct answers received a score of (1), while incorrect or unknown responses received a score of (0). The overall score was a range of 0 to 36. A score of less than 75 percent was deemed an unsatisfactory level of knowledge, while a score of more than 75 percent was considered a satisfactory level of knowledge.

Tool (II): Nurses' observational checklist about nursing performance for patients with spinal cord injury to assess nurses' performance: It was developed by the researchers after reviewing the relevant and most recent literature to assess the actual nurses" practice in caring for patients with spinal cord injury **(WHO, 2019; Catalano, 2019; Singh, 2019; Holmlund, et al., 2017)**. This tool is written in the English language composed of 19 items and divided into three main covering the following: Neurological assessment (3 items), general assessment (2items), head to toe assessment (6 items), and nursing intervention (8 items)

Scoring system for nurses' performance:

The statement or step done was given a score of 1 grade and statement or step not done was given score zero grade Total score for the checklist was 19 grades were classified as follows: Total performance scores converted into percent score where the score of $\geq 85\%$ considered competent performance and a score $< 85\%$ considered incompetent performance.

Validity of the tools:

The tool's content validity was determined by a jury of five specialists' academics experts' professors in the field of medical-surgical department nursing who reviewed the tools. They were also asked to assess the items regarding completeness and clarity. No modifications were done to the tools.

Reliability of the tools:

The researchers used reliability to assess the tool's internal consistency. Cronbach's alpha test revealed that (tool I) had a reliability of 0.93, tool II had a reliability of 0.87.

A pilot study:

A pilot study of 10% of the total sample (5 nurses) was done to examine the clarity and feasibility of the research method; no changes were made. Mothers who took part in the pilot were not included in the study.

Ethical considerations:

Each nurse was informed about the purpose and the benefits of the study then oral consent was obtained before starting data collection. Strict confidentiality was ensured through the study process. The researchers notified the participants that participation in the study is completely voluntary and that they can withdraw at any time.

Fieldwork:

Preparatory phase:

It included reviewing related literature and theoretical knowledge of various aspects of the study using books, articles, the internet, periodical, and magazines to develop tools of data collection. This also helped with the creation of the testing tools and the creation of the video for the nurses' teaching program.

After official permission to carry out the study, the researcher interviewed the nurses and distributed the interviewed questionnaires after explaining the aim of the research. Data were collected in six months from beginning November 2020 to April 2021. The researcher visited the two intensive care units during actual work during the dayshift from 9 am to 1 pm two days weekly. Each nurse was observed separately two times (for each phase) during caring for patients with spinal cord injury by using a spinal cord injury checklist and it took 30-40 minutes.

Administrative Design:

Official permission was obtained from the nursing and medical director of the intensive care unit at the previously selected settings, after explaining the aim of the study to gain their approval and cooperation.

The Implementation of the study was carried out in three phases (assessment phase, implementation phase, and evaluation phase).

I-Assessment phase:

The researchers explained to nurses the aim and expected outcomes of the study before collecting data, then asked them to complete the tools. The average time required for the completion of each tool was around 25-30 minutes. The tools used for collecting data were used as pretest tools (tool I, part two, and tool II). Pre-testing tools were used to assess the nurses' knowledge and performance through observation.

II-Implementation Phase:

Each group consisted of 6 nurses throughout four sessions (two theoretical and two practical sessions) included a demonstration and re-demonstration for each aspect of the program using available tools such as a video-assisted teaching program and the researchers' laptops. Sessions were performed in Arabic with some visual aids to ensure that all study subjects were understood. Data were collected by the researchers, a pretest was conducted before video-assisted teaching, followed by administration of video-assisted teaching, and then posttest was assessed.

Evaluating the video:

The videos were evaluated by five experts in the field of medical and surgical nursing. The research experts in the field ensured clarity and appropriateness by reviewing the video and contents of the spinal cord injury.

The general objectives of the video-assisted teaching program were to improve nurses' performance regarding spinal cord injury.

Specific objectives: At the end of the video-assisted teaching program the studied nurses were able to:

1- Define spinal cord injury
2- Explain the anatomy and Physiology of spinal cord injury
3- List risk factors of spinal cord injury
4- Enumerate causes of spinal cord injury
5- List signs and symptoms of spinal cord injury
6- Discuss complications of spinal cord injury

7- Apply nursing care for patients with spinal cord injury

The duration of video sessions for each theoretical and practical session ranged from 40-50 minutes for two days per week. The theoretical video sessions were started from 11:00 AM to 12.00 PM. The theoretical video sessions focused on knowledge about the definition of spinal cord injury, anatomy, physiology, risk factors, causes, sign and symptoms, complications, care of spinal cord injury. The practical video sessions were started from 12:00 PM to 1.00 PM. The practical video sessions focused on (communication with the patients and communication with the staff), patient hygiene (bathing, washing foot care, hair, nail care, perineal care, mouth, and oral care), urinary catheter care, and bowel rehabilitation (aim of bowel management, stages of it, abdominal massage, removal of stool from lower bowel and rectum, posture and anorectal stimulation), transferring patient from bed to the wheelchair and the opposite, and wound care (wound assessment and stages of the wound, healing process, signs of the infection).

III. Evaluation phase:

After the implementation of the video-assisted teaching program, the nurses' knowledge and performance were evaluated after one month by using the same pre-video-assisted teaching format of their last training session.

Statistical design:

Data were statistically analyzed using the SPSS computer program. Description of qualitative variables was done in the form of frequency and percentage and for quantitative variables as mean and standard deviations. Differences between variables were done using chi-square.

Results:

Table 1: Illustrates the nurses' demographic characteristics; it was observed that the mean age of the studied nurses was 28.68±6.7 years. Concerning gender (88%) of the studied nurses were females, while only 12% of them were males, and (52%) of them graduated from the technical institute of nursing. Also, it was noticed that 48% of them had experience from 1 to less than 5 years. Finally, it clarified from the same table that 54% of the studied nurses are working in general intensive care while 46% of them are working in the neurological intensive care unit.

Table (2): Illustrates an improvement with a highly statistically significant difference found between nurses' knowledge pre/post-video-assisted teaching program implementation (P<0.001).

Table (3): Demonstrates that (38%) of the studied nurses had satisfactory knowledge regarding spinal cord injury pre-video-assisted teaching program implementation which improved post-video-assisted teaching program implementation and becomes 96% of them had satisfactory knowledge. A highly statistically significant difference was detected between nurses' knowledge pre/post-video-assisted teaching program implementation (P<0.001).
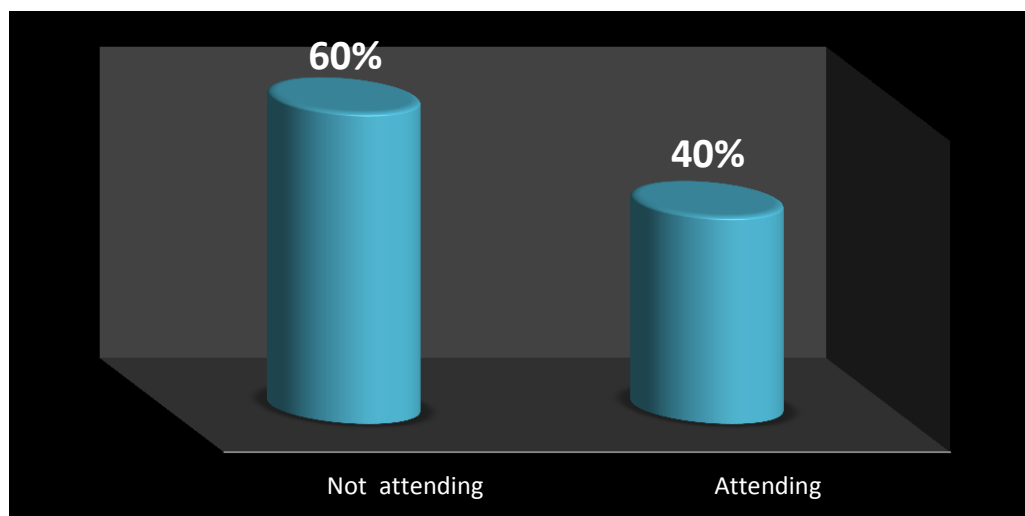
Figure 1: Portrays the percentage distribution of the studied nurses' total performance regarding spinal cord injury pre and post-video-assisted teaching program, and indicated that the majority (52%) of the studied nurses had an incompetent level of performance pre-video- assisted teaching intervention while the majority (98%) of them had a competent level of performance post-video-assisted teaching intervention.

Table (4) shows a correlation between the total knowledge and total performance scores of the nurses who were studied before and after the video-assisted teaching program. There was a statistically significant positive connection between the total knowledge and total performance scores of the studied nurses at the post of the video-assisted teaching program (p<0.001**).

Tables 5: Illustrates that there was a significant statistical correlation between the total knowledge and performance of the studied nurses and their demographic characteristics (age, academic qualification, years of experience & previous training course) pre and post-video-assisted teaching intervention (P < 0.05).

Table 1: Frequency and percentage distribution of the studied nurses according to their demographic characteristics (n=50)

Items	No.	%
Age/ Year		
- < 20	17	34
- 20 < 30	23	46
- 30 ≥ 40	10	20
X± SD	28.68±6.7yrs	
Gender		
- Male	6	12
- Female	44	88
Academic qualifications		
- Diploma in nursing	12	24
- Technical institute in nursing	26	52
- Bachelor in nursing science	12	24
Years of experience		
- < 1	15	30
- 1 < 5	24	48
- 5 ≥ 10	11	22
X± SD	**3.87 ±1.8**	
Working unit		
General intensive care	27	54
Neurological intensive care unit	23	46

Figure 1: Percentage distribution of the studied nurses according to their previous attendance to training courses regarding spinal cord injury (n=50)

Table (2): Frequency and percentage distribution of the studied nurses' knowledge regarding spinal cord injury pre and post-video-assisted teaching program implementation (n=50)

Nurses' knowledge	Pre video-assisted teaching program implementation		Post-video-assisted teaching program implementation		P-value
	No	%	No	%	
Definition of the spinal cord injury	20	40	50	100	<0.001*
Types of the spinal cord injury	24	48	49	98	<0.001*
Signs and symptoms of the spinal cord injury	26	52	47	94	<0.001*
Complications of the spinal cord injury	22	44	46	96	<0.001*
Component of neurological assessment	19	38	46	96	<0.001*
Nursing care measures of the spinal cord injury	28	56	49	98	<0.001*

*highly significance at 0.001 levels

Table (3): Percentage distribution of the studied nurses' total knowledge regarding spinal cord injury pre and post-video-assisted teaching program implementation (n=50)

Total knowledge	Pre video-assisted teaching program implementation		Post-video-assisted teaching program implementation		T	P-value
	No	%	No	%		
Satisfactory	19	38	48	96	6.024	<0.001*
Unsatisfactory	31	62	2	4		

*highly significance at 0.001 levels
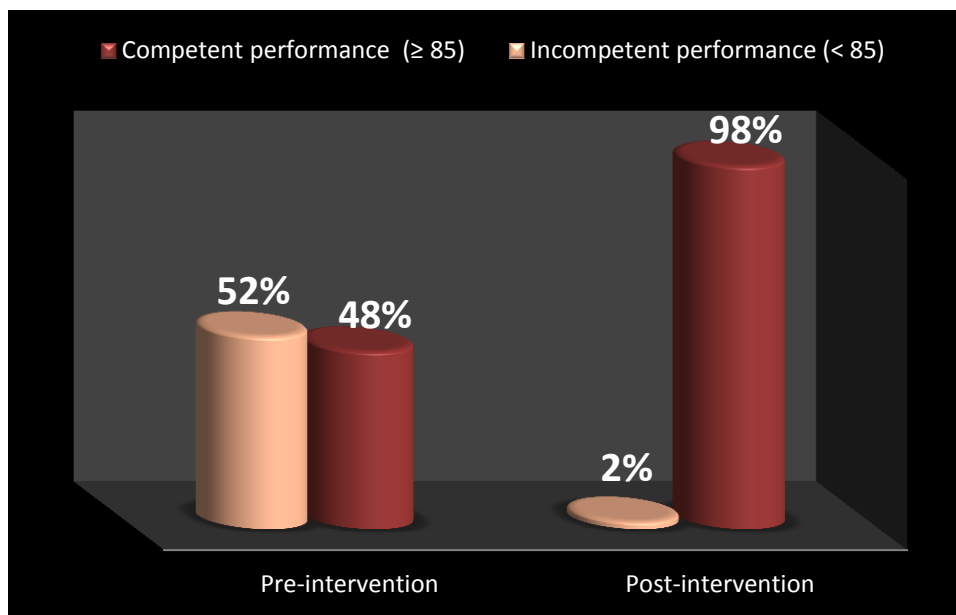
X^2= 45.345   P value=0.000**   **Highly statistically significant at P value <0.001.

Figure 2: Percentage distribution of the studied nurses' total performance regarding spinal cord injury preand post-video-assisted teaching program (n=50).

Table (4): Correlation between total knowledge score and total performance score of the studied nurses pre and postvideo-assisted teaching program (n=50).

Variables	Pearson correlation coefficient			
	Total knowledge score			
	Post video-assisted teaching program (n=50)		Pre video-assisted teaching program (n=50)	
	r	P	r	P
Total performance score	.461	.000**	.628	.000**

** Correlation is significant at the 0.01 level

Table 5: Correlation between studied nurses' knowledge and performance regarding spinal cord injury post- video-assisted teaching program and their demographic characteristics (n=50)

Nurses' demographic characteristics	Nurses' knowledge		Nurses' performance	
	r	P-value	r	P-value
▪ **Age**	0.575	0.013*	0.624	0.011*
▪ **Academic qualification**	0.426	0.001*	0.552	0.014*
▪ **Years of experience**	0.417	0.013*	0.655	0.015*
▪ **Previous training course**	0.527	0.001*	0.523	0.001*

* P-value <0.05 --------------------------statistically significance

Discussion:

A spinal cord injury is a type of injury to the spinal cord that can impact the entire body's systems. It can be a catastrophic injury that radically transforms a patient's life. This injury has a negative impact on the individual's overall physiological, psychological, economic, and social well-being, which could be disastrous (**Vernon & Kirshblum, 2018**). Because spinal cord injury is a life-threatening emergency with a high rate of morbidity and death, individuals with spinal cord injury are classified as critically sick and require immediate admission to a hospital for diagnosis and treatment (**Pamela, 2015).**

Video technology is gaining popularity because it has special characteristics that accurately reflect the essence of nursing occurrences. In addition, video technology is widely employed in nursing as a teaching tool since it gives continuous multi-media, multisensory information about a topic and its environment (**Balasubramanian et al., 2018).**

Results of the present study indicated that the mean age of the studied nurses was 28.68±6.7 years, more than half of them graduated from the technical institute of nursing, and less than half of them had experience from 1 to less than 5 years.

This finding matched with **Qtait, and Sayej (2016)** in a quantitative descriptive study to investigate the level of nursing performance and the factors that affect nursing performance in Hebron hospitals, on 181 nurses working in Hebron district Hospitals in the West Bank Palestine they find that, The majority of the nurses were with age less than 39 years old, with less than ten years of experience, but 60% of them had a bachelor degree.

Also, these findings are in the same line with **Mohammed, (2016)** who conducted a study about " Effects of implementing educational program about pressure ulcer control on nurses' knowledge and safety of immobilized patients "and reported that more than half of the study subjects years of experience in ICU ranged between (1-5) years.

On the other hand, these results are inconsistent with **Wami (2014)** who did a study in Addis Ababa about "Assessment of knowledge, practice and associated factors of adult intensive care nurses' on prevention of ventilator-associated pneumonia in selected hospitals" and stated that the largest number had experienced more than one year to five years in ICU.

Results of the current study highlighted an improvement with a highly statistically significant difference found between nurses'

knowledge pre/post-video-assisted teaching program implementation. From the researchers' point of view, this demonstrates how well the video-assisted teaching program was very effective. This reflected the imperative need to understand the purpose of the video-assisted teaching program to improve knowledge.

This finding is supported by **Mauk et al., (2017),** in a study to educate Chinese nurses about nursing; they concluded that knowledge of the nurses on topics of basic rehabilitation nursing increased as a result of the educational program with statistical significances.

Also, These results are in the same line with **Snehalben et al., (2021)** who studied "The Impact of a Video-Assisted Structured Teaching Program on Knowledge among Primigravida Mothers in Rajkot" and stated that there was a high improvement in knowledge with significant at p<0.05 level.

Concerning the studied nurses ' total knowledge regarding spinal cord injury, the findings of the current study revealed that more than one-third of the studied nurses had satisfactory knowledge and about two-thirds of them had unsatisfactory knowledge regarding spinal cord injury pre-video-assisted teaching program implementation which improved post-video-assisted teaching program implementation, which confirms the nurses' need to understand how the body works, so that, they can understand what happens when it is ill or injured, and what nurses can do about it **(Napier, 2019)**.

In the same context this finding supported by **Subin, (2017)** in a study about "Assessing the effect of video-assisted teaching on knowledge regarding arterial blood gas analysis and interpretation among nurses working in selected hospitals in Bhopal" who reported that there is a significant difference in pre and post video-assisted teaching intervention regarding knowledge level of selected staff nurses.

Also, this finding goes in the same line with **Kaur, & Charan, (2018)** who carried out a study about "Effectiveness of structured teaching program on knowledge and practice regarding arterial blood gases among intensive care unit nurses" and found that the majority of nurses had adequate knowledge and practice post-implementation of the program based learning regarding arterial blood puncture.

These results are parallel with the study published by **Maas, et al., (2015)** who studied "Nursing bedside education and care management time during inpatient spinal cord injury rehabilitation "and found that more than two-thirds of nurses were aware of definition, causes, sign and symptoms and complication of spinal cord injury. Similary, **Yue, et al., (2017)** conducted a study titled" Nurses' Experience in Caring For Patients with Traumatic Spinal Cord Injury" and stated that more than half of the study subjects had inadequate knowledge about the nursing intervention of spinal cord injury.

Concerning nurses' total performance, the results of the present study indicated that the majority of the studied nurses had an incompetent level of performance pre-video-assisted teaching intervention while the majority of them had a competent level of performance post-video-assisted teaching intervention. From the researchers' point of view, this reflected the positive effect of using video-assisted teaching program in improving performance among the studied nurses.

These results were in agreement with **Khodadadi et al., (2017),** in an experimental study on 73 nurses, in Tabriz hospitals; one of their aims was to evaluate the impact of communication skills training on communication skills of nurses that the most of nurses in the research had satisfactory practice regarding assessing orientation to time, place and person, assess appropriate wards& assess comprehensive

Also, This result is similar to **Reynolds et al., (2018),** who conducted a study to implement a spinal cord injury program to examine neurocritical care nurses' practice of spinal cord injury they found that, the implementation program improved nurses' practice, and ensured that, bowel and bladder elimination was ranked as the top two nurse-influence results by an experienced nurse in spinal cord injury patients.

Similarly, the present study finding was also supported by **Mauk, (2016),** in a study to describe evidence-based educational

intervention provided to 16 nurses working on a new inpatient unit; who found that, a significant increase from pretest to posttest after applying for an educational program mostly highly in the pre-and post-tests. The pretest scores for this competency were higher; he added that nurses need to be educated in the basic competencies of care to provide safe, quality care to patients with chronic illnesses and disabilities.

Staff education has a positive effect on nurses in several areas including spinal cord injuries patients to understand their condition and acquire the skills necessary for functioning after discharge from rehabilitation, perceived competency, and increased quality of patient care **(Bailey et al., 2019).**

Results of the current study revealed that there was a statistically significant positive correlation between the total knowledge and total performance scores of the studied nurses at the post of the video-assisted teaching program.

These findings are similar to **Ahmed et al., (2021)** who conducted a study about "Assessing Nurses' Knowledge and Practice concerning Care for Patients with Spinal Cord Injury in the Critical Care Unit" and found a statistically significant relationship between the nurses' knowledge and practice.

Also, this result is supported by **Majeski, et al., (2019)** entitled "Nursing bedside education and care management time during inpatient spinal cord injury rehabilitation" which showed that there was a statistically significant relationship between nurses' knowledge and their practice.

As regards to relations between level of practice and demographic characteristics, The current study revealed that there was a significant statistical correlation between the total knowledge and performance of the studied nurses and their demographic characteristics pre and post-video-assisted teaching intervention. These results are in the same line with **Ahmed et al., (2021)** who stated that a statistically significant relation was detected between the nurses' level of practice regarding caring for patients with spinal cord injury and their demographic characteristics.

Similary, Nuru, et al., (2015), in a cross-sectional survey conducted on 248 nurses in Gondar University hospital to assess knowledge and performance of nurses towards prevention of pressure ulcers, found that there were positive statistical correlations between educational level, knowledge, previous received training and years of experience.

This finding is contradicted with **Feru (2016)** who stated that there was no significant relation in practice between participants with a different year of ICU working experience and the nurses' demographic characteristics which reflected that the performance level is affected by other factors that needed more investigations.

The study findings were not similar to **Reynolds et al., (2018),** who did a study to evaluate a program aimed at improving nurses' knowledge of spinal cord injury guidelines working in neurocritical care unit and reported that no significant correlations among pre-post-program knowledge and nurse's age, and years of experience as a nurse. These correlations between nurses' age and experience and post-program knowledge indicated that the younger, less experienced nurses who participated had higher scores on the knowledge assessment for the post-program.

Conclusion:

Based on the current study's findings and hypotheses, the current study concluded that video-assisted structured teaching program had a highly significant positive effect on improving nurses' knowledge and performance regarding the care of patients with spinal cord injury

Recommendations:

In light of the current study results, the following recommendations are proposed:

- Application of video-assisted structured teaching program for nurses working with spinal cord injury patients at intensive care unit to improve their performance.

- Future research includes replication of the current study on a large group and another setting for generalization.

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