ROM	Range of Motion
SCI	Spinal Cord Injury
UMNs	Upper Motor Neurons
USA	United States of America
UTIs	Urinary Tract Infections
V.S	Vital Signs

NURSES' PERFORMANCE IN EMERGENCY MANAGEMENT OF PATIENTS WITH SPINAL CORD INJURY

Thesis

Submitted for Partial Fulfillment of the Requirements of Master Degree
*In **Nursing Science** (Medical-Surgical Nursing)*

By

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List of Abbreviations

ABC	Airway, Breathing and Circulation
ABGs	Arterial Blood Gases
AD	Autonomic Dysreflexia
ASIA	American Spinal Injury Association
ASU	Ain Shams University
BMR	Basal Metabolic Rate
B.Sc.N	Bachelor Science in Nursing
CNS	Central Nervous System
CPR	Cardiopulmonary resuscitation
CSF	Cerebrospinal Fluid
CT	Computed Tomography
DVT	Deep Venous Thrombosis
ECG	Electrocardiography
ED	Emergency Department
IV	Intravenous
GCS	Glascow Coma Scale
GI	Gastrointestinal
Hb	Hemoglobin
ICP	Intracerebral Pressure
ICU	Intensive Care Unit
LMNs	Lower Motor Neurons
MP	Methylprednisolone
MRI	Magnetic Resonance Imaging
NASCIS	National Acute Spinal Cord Injury Study
Ng	Nursing
NSU	Neurosurgical Unit
O^{2}	Oxygen
OR	Operating Room
PE	Pulmonary Embolism

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INTRODUCTION

Spinal cord injury (SCI) is one of the most devastating calamities in human life. An injury to spinal cord can potentially affect every system of the body. It can be a catastrophic injury that changes a patient's life completely. This injury affects the total physiologic, psychologic, economic and social well-being of the individual which might be disastrous. The potentially grave consequences of spinal cord injury have long been appreciated. ***(Abd El Rahman, ١٩٩٩)***

The National Spinal Cord Injury Association(NSCIA) estimates that there are ٧, ٨٠٠ new injuries in the USA per year and anywhere from ٢٥٠،٠٠٠ to ٤٠٠،٠٠٠ individuals are living with spinal cord injury or dysfunction, ٨٢٪ of them are males with the median age of ١٩ years. The most common causes are motor vehicle accidents, acts of violence, falls and sports. After age ٤٥, falls are the leading cause of spinal cord injury; ٤٥٪ of these injuries are complete with slightly more than half resulting in quadriplegia ***(NSCIA, ٢٠٠٦)***.

In Egypt, according to statistics from the Information Center at Ain Shams University Hospital (ASU), which states that in the year ٢٠٠٤, the number of cases admitted to ASU, El-Demerdash Hospital with SCI account for ٤٪ from all cases coming to the Neurosurgery ICU; and the number of cases admitted to ASU -Specialized Hospital with SCI accounted for ٧,٨٪ from all cases coming to ICU (A & B). In ٢٠٠٥, the number of cases admitted to ASU El-Demerdash Hospital with

SCI accounted for ١٤,٣٪ from all cases coming to the Neurosurgery ICU and the number of cases admitted to ASU-Specialized Hospital with SCI accounted for ١٠,٢٪ from all cases coming to ICU (A & B). In a study carried out by ***Elsayed (٢٠٠١),*** spinal cord injuries equal ٨٪ from the different types of traumatic injuries. These previous results indicate the important need to conduct this study to assess the efficiency of emergency management for the patient with spinal cord injury.

The organized management of spinal cord injury is a team activity and the nurse is at the control position of that team ***(Yazicioglu , Gunduz, Ozgual,Alaca and Arpacioglu , ٢٠٠١)***. Emergency care can be defined as the episodic and crisis oriented care provided to patients with serious or potentially life threatening injuries or illness. The philosophy of emergency care includes the concept that an emergency is whatever the patient or family considers it to be ***(Saad, ٢٠٠٢).***

Understanding the principles of acute care management will help guide the nurse in executing interventions aimed at preservation of neurologic function ***(Prendergast and Sullivan, ٢٠٠٠).*** The acute management of patients with SCI can significantly affect the patient's eventual neurologic and functional outcome and ultimately their quality of life. Early intervention is aimed at re-establishing physiologic homeostasis, lessening the amount of secondary injury, and preserving neurologic function ***(Karlet, ٢٠٠١).***

The immediate nursing management of the patient at the scene of the injury is critical because improper handling

can cause further damage and loss of neurological function.The goals of management are to prevent further SCI and to observe for symptoms of progressive neurologic deficits. The patient is resuscitated as necessary, and oxygenation and cardiovascular stability are maintained. At the scene of the injury, the patient must be immobilized on a spinal (back) board, with head and neck in a neutral position, to prevent an incomplete injury from becoming complete. Transportation to the most appropriate medical facility is mandatory ***(Smeltzer und Bare, ٢٠٠٤).***

Emergency nursing is one of the most challenging nursing specialties. This specialty requires that the nurse, whether in the hospital emergency department or prehospital setting, uses a scientific knowledge base, effective communication, clinical skills, and the nursing process to care for the physiologic and emotional needs of patients and families. Crisis intervention and the use of emergency skills are important to patient's life and family concerns during stressful emergency situations. Rapid assessment, history taking, appropriate intervention and emotional support for the family and patient must occur in a short period of time ***(Lewis and Hitkemper and Dirksen, ٢٠٠٤).***

The critical care nurse plays a significant role in the initial management of patients with SCIs, particularly injuries involving the cervical region of the cord. Motor vehicle accidents are the most common cause of SCIs, and these

accidents frequently involve multiple traumas and head injury in addition to the SCI. Patients may be managed in surgical intensive care units or in specialized neurologic care areas ***(Phipps,Monahan,Sands,Marek and Neighbors, ٢٠٠٣).***

The goal of the nursing intervention during the critical care phase is to prevent life threatening complications while maximizing the functioning of all organ system. Nursing interventions are aimed at preventing secondary damage to the spinal cord and managing the cardiovascular and respiratory complications of the neurologic deficit. Because almost all body systems are affected by SCI, nursing management must also include interventions that optimize nutrition, elimination, skin integrity, and mobility. Prevention of complications that can delay the patient's rehabilitation is one of the goals of critical care. In addition, patients with SCI have complex psychosocial needs that require a great deal of emotional support from the critical care nurse ***(Urden and Stacy, ٢٠٠٠).***

Emergency nursing practice is systematic. It includes the nursing process, nursing diagnosis, decision making, and analytic and scientific thinking and inquiry. Professional behaviors inherent in emergency nursing practice are acquisition and application of a specialized body of knowledge and skills, accountability and responsibility, communication, autonomy, and collaborative relationships with others ***(Saad, ٢٠٠٢).***

Significance of the study

Since the numbers of patients with spinal cord injury, has increased in Egypt and all around the world, those patients are in need to the highest quality of care. Traumatic injuries require rapid, efficient, precise diagnosis and immediate treatment. Patients with major trauma injuries place special demands on emergency department(ED), operating room (OR) and intensive care unit (ICU) health care providers. Cost effective and time efficient management of these patients results in improved patient care and optimal outcome in this era of shrinking health care funds ***(Elsayed, ٢٠٠١).***

It is hoped that, data generated from this study could help in planning and managing care in ED, OR and ICU, as well as training adequately the personnel responsible for the provision of such care. Moreover, to generate attention for further researchers to supplement body of knowledge this might be useful for patients, as well as other health care professionals.

Theoretical definition of "Performance"

The term of performance is used to focus attention on the total behavior of person including his organization, the use of specialized knowledge, his attitude acquired through training, as well as organization and integration of practice ***(Mosa, ٢٠٠٢).***

Operational definition

Performance in this study composed of the nursing activities that done in the neurosurgery intensive care units which are based on the nurses' knowledge, attitude and practice are linked with each other.

AIM OF THE STUDY

To assess performance of the nursing staff toward patients with spinal cord injury in emergency management.

Research questions:

- Is the nurses' performance toward patients with spinal cord injury in emergency management satisfactory?
- What are the most common areas of satisfactory and unsatisfactory nurses' performance regarding to patients with SCI?

Anatomy and Physiology of the Spinal Cord

The spinal cord is the major bundles of nerves that carry nerve impulses to and from the brain to the rest of the body. The brain and the spinal cord constitute the central nervous system (CNS). Motor and sensory nerves outside the CNS constitute the peripheral nervous system. Another diffuse system of nerves that control involuntary functions such as blood pressure and temperature regulation are the sympathetic and parasympathetic nervous systems ***(AASCIN, ٢٠٠٣).***

The peripheral system consists of ٣١ pairs of spinal nerves and the autonomic nervous system. Spinal nerves innervate skeletal muscle and a segment of skin called a dermatome ***(Newberry, ٢٠٠٣)***. Each spinal nerve has a dorsal root, which transmits sensory information, and a ventral root which transmits motor information. The ١٢ cranial nerves, arising from the brain stem, also are part of the peripheral nervous system ***(Linton ,Matteson and Maebius, ٢٠٠٠).***

These spinal nerves exit and enter at each vertebral level and communicate with specific areas of the body. The sensory portions of the cord, contained within the ascending tracts of the upper motor neurons (UMNs) carry messages about sensation from the skin such as pain, temperature, touch and joint position and other body parts and organs to the brain. The motor portions of the spinal cord contained within the descending tracts of the lower