Nurses' Performance Toward Arterial Line Complications

Thesis

Submitted for partial fulfillment of the Master Degree
in Medical Surgical Nursing (Critical Care)

By

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(B.Sc. in Nursing Science, 2012)
Faculty of Nursing– Cairo University

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Mohamed Sabry Mohamed Elgohary

Nurses' Performance toward Arterial Line Complications

Abstract

Background: Arterial line placement is a common procedure is used for continuous hemodynamic and blood gas monitoring. Proper care of arterial line is critical for the prevention of arterial line complications. **The aim of this study** was to assess the nurses' performance regarding arterial line complications in intensive care units. **Design:** A descriptive exploratory design was followed to achieve the aim of this study. **Setting:** The study was conducted at the open heart intensive care unit at Academy of Heart affiliated to Ain shams University Hospitals. **Sample:** A Convenience sample of all available nurses 30 in ICU (intensive care unit). **Tools of data collection: I** structured self-Administered knowledge assessment Questionnaire, **II** nurses Observational check list, **III** Nurses` attitude rating scale. **Results:** The results of this study showed that, 80% of studied nurses had unsatisfactory knowledge, 78.3% of them had unsatisfactory practice and 63.7% of the study group of nurses had negative attitude regarding arterial line insertion complications. **Conclusion**: the current study concluded that more than three quarter of the studied nurses had unsatisfactory level of knowledge and practice. **Recommendations:** The study recommended the importance of implementing an educational training program to improve nurses' performance regarding arterial line complications.

Key words: Arterial line, Complications, Nurses' performance

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List of Abbreviations

Abbr.	Full term
ABG:	Arterial Blood Gases
ARDS:	Acute Respiratory Distress Syndrome
BP:	Blood Pressure
BScN:	Bachelor of Science in Nursing
HCPs:	Health Care Providers
ICU:	Intensive Care Unit
MAP:	Mean Arterial Pressure
PAL:	Peripheral Arterial line
SPSS:	Statistical Package for Social Sciences
USA:	United States of America

INTRODUCTION

Arterial line placement is a common procedure in various critical care settings. The proper placement of peripheral arterial line (PAL) is essential to the competent care of patient in the emergency department and intensive care unit. The procedure clinically known as (PAL) allows the Health Care Providers (HCPs) to access arterial blood for diagnostic purpose. PAL offers several advantages over the traditional noninvasive techniques of blood pressure monitoring. **(Koyfman, 2017)**

Intra-arterial blood pressure measurement is more accurate than indirect blood pressure monitoring. When arterial cannula is placed, continuous monitoring of Mean Arterial Pressure (MAP) in any time becomes possible. For patients being treated with continuous intravenous infusion or vasoactive drugs, the PAL allows the effective monitoring of rapid fluctuations in blood pressure. **(Loukas, Tubbs and Feldman, 2016**)

The most common site of arterial line is the radial artery, because of the superficial nature of the vessel and the ease with which the site can be maintained. Additional advantages of radial arterial line include the consistency of

the anatomy and the low rate of complications. **(Taylor, Sing and Sherry, 2016)**

Complications of arterial catheter are limb ischemia related to catheter material, size, length, advanced atherosclerosis, Raynaud disease, burger disease, small wrist circumference which suggests small vessel and accidental injection of medication in to arterial line. Miss interpretation of data and acute hypertension as transducer on the floor. Infection and septicemia related to septic cannulation, improper care of stop cock and extended duration of cannulation. **(Fleisher & Rosenbaum, 2017)**

Nurses have a crucial role in preventing and identifying arterial line complications. Understanding the pathogenesis of infectious and hemorrhage complications. The principles of best practice and adhering to these practices consistency are critical in order to minimize unnecessary risk to patients with an arterial line. **(Koyfman, 2018)**

Proper care of arterial line insertion site is critical for the prevention of arterial line complications. Nursing responsibility for arterial lines include careful monitoring, flushing to keep the line patent, site care and dressing change to avoid arterial line complications. Apriority of care for

patient with Intra-arterial access is to prevent, assess and detect complications then manage the complications. **(Workman, Rebar and Ignatavicius, 2015)**

Significance of the study

Arterial line placement is a common procedure in various critical care settings. Intra-arterial Blood Pressure (BP) measurement is more accurate than measurement of BP by noninvasive means, especially in the critically ill. Nurse's role is very important to prevent arterial line complications, so this study conducted to assess nurse's performance toward arterial line complications**. (Loukas, Tubbs and Feldman, 2016)**

A study was conducted in cardio-thoracic intensive care units at Ain Shams university hospitals to assess nursing performance with peripheral vascular line, showed that the most frequently observed complications of arterial line were thrombosis 46.0% and arterial spasm 38, 0%. Over all 51, 0% of the 100 patients who involved in the study had at least one complications resulted from arterial line insertion. **(Mustafa, 2009)**

Common complications of arterial line placement are Temporary radial artery occlusion 19.7%, Hematoma

/bleeding 14.4%. For femoral artery, the most common complication is hematoma 6% followed by bleeding and temporary occlusion 2%. Less common and rare complications include localized catheter site infection 0.72%. A large study of patients in intensive care in United States of America (USA) found no significant difference in infection rates between femoral and radial artery catheter. **(Taylor, Sing and Sherry, 2016)**

So it was important to conduct this study to assess nurses' performance in caring for patient with arterial line to prevent arterial line complications.

AIM OF THE STUDY

The present study was conducted to fulfill the following aim:

Assess the nurses' performance toward arterial line complications through the following:

1- Assess nurses' level of knowledge toward arterial line complications
2- Assess nurses' level of practice toward arterial line complications.
3- Assess nurses' attitude toward arterial line complications.

Research Question:

This study was conducted for answering the following questions:

- What is the nurses' knowledge toward arterial line complications?
- What is the nurses 'level of practice toward arterial line complications?
- What is the nurses' attitude toward arterial line complications?