Factors Affecting Nurses' Performance for Patients with Acute Myocardial Infarction within the Golden Hours

Thesis

Submitted for Partial Fulfillment of Master Degree
In Critical Care Nursing

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العوامل المؤثرة على أداء الممرضات لمرضى جلطة القلب الحادة خلال الساعات الذهبية

رســـالة

توطئة للحصول على درجة الماجستير
فى تمريض الحالات الحرجة

مقدمة من

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كلية التمريض
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Introduction

Cardiovascular disease (CVD) is a global health problem. Understanding the burden and effects of CVD in populations is of critical importance. Changing clinical definitions, criteria and biomarkers add challenges to our understanding and ability to improve the health of the public ***(Rubini, Twerenbold & Reichlin, 2015).***

Acute coronary syndromes (ACS) are the most prevalent cardiac diagnoses requiring emergency medical services, acute care, and hospitalization worldwide. The subgroups of ACS patients with acute myocardial infarction (AMI) are associated with the highest mortality and morbidity if not treated with appropriate reperfusion therapy in a timely matter ***(Canadian Institute for Health Information, 2013).***

Acute myocardial infarction (AMI), commonly known as a heart attack, results in the death of heart muscle. An MI occurs from a partial or complete blockage of a coronary artery, which decreases the blood supply to the cells of the heart supplied by the blocked coronary artery ***(Williams & Hopper, 2015).***

The AMI is a critical emergency that requires timely management to save heart muscle and limit damage that may evolve over several hours. Blood flow is abruptly

decreased or stopped through the coronary arteries and results in ischemia and necrosis to the myocardium if not treated ***(Sommers, & Fannin, 2015).***

The AMI is defined as a sudden lack of oxygen to the cardiac muscle due to a clot or atherosclerotic changes that occlude a coronary artery. Cardiac cell death is not immediate but can occur within 20 minutes and up to 2 hours after the initial occlusion ***(Thygesen, Alpert, Jaffe, Simoons, Chaitman, & White, 2012).***

The AMI is a major cause of death and disability worldwide. According to the contemporary universal definition of MI, the criteria for diagnosis of AMI were recommended as follow: detection of rise and/or fall of cardiac biomarkers (preferably troponin) with at least one of the following: *(i)* symptoms of ischemia; *(ii)* ECG changes indicative of new ischemia (new ST changes or new left bundle branch block); *(iii)* development of pathological Q waves in the ECG; and *(iv)* imaging evidence of new loss of viable myocardium or new regional wall motion abnormality ***(Eggers,2015).***

Acute myocardial infarction is caused by acute plaque rupture and thrombus formation in the coronary artery resulting in a sudden disruption in blood flow to the heart muscle and death of heart tissue. Over 4.9 million

Americans suffer from heart failure (HF), with 550,000 new cases diagnosed annually and new diagnoses expected to reach 1.5 million annually by the year 2040 ***(Polikandrioti, Goudevenos, Milchalis, Koutelekos, Kyristi, Tzialas, & Elisaf, 2015).***

In studies of disease prevalence, ***(WHO, 2014)*** defined MI from symptoms, ECG abnormalities and cardiac enzymes. However, the development of ever more sensitive and myocardial tissue-specific cardiac biomarkers and more sensitive imaging techniques now allows for detection of very small amounts of myocardial injury or necrosis.

The AMI has a mortality of 30% with half of deaths occurring before hospital arrival. Recent data has shown that providing AMI care in hospitalized patients that is both appropriate and timely (according to guideline-based practice) reduces 30-day mortality rates by half. The reduction in mortality is true whether the chosen method of reperfusion is fibrinolysis or primary percutaneous coronary intervention (pPCI). AMI care is often characterized by the phrase “time is muscle” highlighting the importance of timely reperfusion in order to save the heart tissue ***(Lambert BO, Brown, Segal, Brophy, Rodes-Cabau, & Bogaty, 2010).***

Acute myocardial infarction is a medical emergency requiring immediate intervention. More than 90% of myocardial infarctions are caused by an acute thrombotic obstruction in a coronary artery that prevents the circulation of oxygenated blood to a portion of the heart. Irreversible, ischemia-induced myocardial necrosis begins within as little as 20 minutes of occlusion. The longer the duration of the occlusion, the greater the volume of necrotic myocardium and the larger the final infarct size ***(Dries, 2012).***

Institute of Emergency Medical Services (IEMSs) describes the time immediately after an emergency as the "Golden hour" when the life hangs in a balance which can be saved by administration of right medications and emergency care ***(Ascheim & Kushner, 2013).***

The golden hour (GH) is the time from the moment of hospital admission to perform the necessary, life-saving intervention. Which means attack is “time sensitive” & there is no time to waste. The golden hour is best conceived as an imperative to get the patient to the right care in the shortest period of time ***(Diercks, Peacock, & Hollander, 2014).***

Nurses constitute the largest human resource element in healthcare organizations and their performances have a

direct effect on health care productivity. Research reports show several factors affect the nurses' performance level. Job satisfaction, organizational commitment, level of education, experience, nurses' morale, work-related stress & burnout, support from co-workers, supportive supervision& feedback, training on clinical tools, recognition, job expectations, work environment, motivation, incentives, knowledge, skills, promotion, remuneration and competency level are among the numerous factors affecting nurses performance level ***(Tesfaye Abera, Balcha, Nemera, & Belina, 2015).***

Significance of the Study:

Data on the global burden of disease have shown that CVD will soon become the leading cause of death worldwide, killing close to 17, 5 million people in the world each year an estimated 31% of all deaths worldwide, >75%of CVD deaths occur in low-income and middle-income countries, 80%of all CVD deaths are due to heart attacks and strokes (MI). Projections of mortality, taking into account the expected increases in population and increased life expectancy, suggest that CVD will be the leading cause of mortality, measured as "lost years of life," and the leading cause of "years lived with disability" in all parts of the world by the year 2020 ***(WHO, 2016).***

Similar to other Arab countries, coronary artery diseases (CAD) is a common heath problem in Egypt. It is the commonest cause of death among Egyptians. The CVD mortality accounts for 46% of total deaths, all ages and both sexes, according to ***(WHO, 2014).***

Trends in CVD mortality in the last few years show a minor reduction due to preventive efforts especially against smoking, an operational action plan to reduce the burden of tobacco use ***(Abdul Rahim, Sibai, & Khader, 2014).***

Assessment and treatment should not be delayed, AMI is a medical emergency where minutes can make a difference. Rapid movement through the care pathway is essential because a malignant ventricular arrhythmia is a major and reversible cause of death in the early hours after the onset of infarction. The long-term prognosis will depend on the salvage of myocardium, particularly with thrombolysis. However, the effectiveness of thrombolysis is greatest if it is given early. Bringing emergency diagnosis and drug treatment to the patient in order to reduce delays in treatment has been explored ***(Hinkle & Cheever, 2014).***

From clinical observation in the cardiac care and critical care units, it was observed that the number of patients with AMI has increased over the last years and these patients require intensive collaborative care to save their lives and they are at risk for several consequences.

These consequences in turn may have negative impact on the patient's physical and psychological condition, and will prolong patient's hospital stay, and increase hospital costs, That is why there is an interest to conduct such type of research which might safeguard this category of patients against these serious consequences, In addition, scattered researches were done in this area especially on the national level ***(Basavanthappa, 2015).***

There is need to seek evidence about performance of nurses and it is necessary to improve the level of performance of first-line health workers or those who are continuously in contact with the clients, community and patients at different levels of health care system of study area. Therefore, the objectives of this study were assessing level of performance of nurses and identifying factors affecting.

Aim of the Work

A study was conducted to assess factors affecting nurses' performance for patient with acute myocardial infarction within the golden hours **through the following:**

1. Assess the nurses' performance regarding emergency management for patients with acute myocardial infarction within golden hours at critical care unit.
2. Assess the factors that affecting nurses' performance during emergency management for patients with acute myocardial infarction within golden hours at critical care unit.

Research Questions:

1. What are the nurses' performance regarding emergency management for acute myocardial infarction patients within golden hours at critical care unit?
2. What are the factors that affecting nurses' performance during emergency management for patients with acute myocardial infarction within golden hours at critical care unit?

Review of Literature

Anatomy & physiology of the heart:

Heart* is** a powerful muscle slightly larger than a clenched fist, located in the thoracic cavity medial to the lungs and posterior to the sternum. It is composed of four chambers, two upper (the atria) and two lower (the ventricles). It works as a pump to send blood rich with oxygen through all the parts of the body. A human heart beats an average of 100,000 times per day. During that time, it pumps more than 4,300gallons of blood throughout the entire body ***(National Heart and Lung Institute, 2015).

The fibrous pericardium envelops the heart and attaches onto the great vessels. The serous pericardium is a closed sac consisting of two layers – a visceral layer or epicardium forming the outer lining of the great vessels and the heart, and a parietal layer forming an inner lining of the fibrous pericardium. The two layers of the serous pericardium contain the pericardial fluid, which prevents friction between the heart and the pericardium ***(Boulpaep, 2010).***

The heart's cycle begins when - blood with poor oxygen level from the body flows into the right atrium. Next the blood flows through the right atrium into the right ventricle, which serves as a pump that sends the blood to the lungs. Within the lungs, the blood releases waste gases and picks up oxygen. This newly oxygen-rich blood returns from the lungs to the left atrium through the pulmonary veins. Then the blood flows through the left atrium into the left ventricle. Finally, the left ventricle pumps the oxygen-rich blood out through the aorta and from there to all parts of the body. The human body has about 5.6 liters (6 quarts) of blood, all of which circulates through the body three times every minute ***(Deniels & Nicoll, 2012).***

The cardiovascular system delivers oxygen and nutrients to the tissues and carries away waste materials to be eliminated by organs such as lungs, liver and kidneys this system is required to function under various normalized and diseased conditions, the pulmonary and systemic circulations together help in fulfilling this role. Pulmonary circulation is a low resistance, high capacitance bed, and systemic circulation, in comparison, is a relatively high resistance vascular bed ***(Widmaier, Raff, & Strang, 2011).***

Coronary arteries supply blood to the heart muscle. The two main coronary arteries are the left main and right coronary arteries. The left main coronary artery (LMCA) supplies blood to the left side of the heart muscle (the left ventricle and left atrium). The left main coronary divides into branches: The left anterior descending artery branches off the left coronary artery and supplies blood to the front of the left side of the heart. The circumflex artery branches off the left coronary artery and encircles the heart muscle. This artery supplies blood to the outer side and back of the heart ***(WhiteDuncan, & Buamle, 2013).***

The right coronary artery (RCA) supplies blood to the right ventricle, the right atrium, and the sinoatrial (SA) and atrioventricular (AV) nodes, which regulate the heart rhythm. The right coronary artery divides into smaller branches, including the right posterior descending artery and the acute marginal artery. Together with the left anterior descending artery, the right coronary artery helps supply blood to the middle or septum of the heart ***(National Heart and Lung Institute, 2015).***

Since coronary arteries deliver blood to the heart muscle, any coronary artery disorder or disease can have serious implications by reducing the flow of oxygen and nutrients to the heart muscle. This can lead to a heart attack and possibly death. Atherosclerosis (a buildup of plaque in the inner lining of an artery causing it to narrow or become blocked) is the most common cause of heart disease ***(Timby & Smith, 2010).***

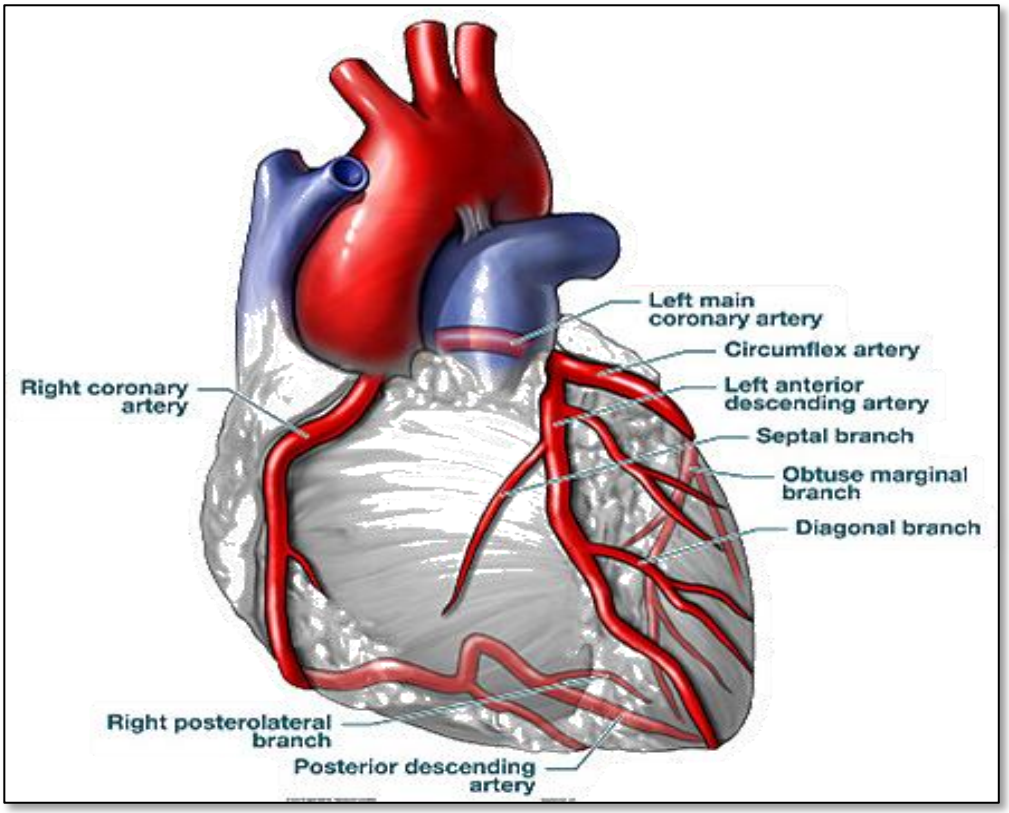

Figure (1): Front surface of a heart, including the coronary arteries and major blood vessels Adapted from: ***(Tortora & Nielsen, 2012).***