Assessment of Nurse’s Competences during Emergency Management of patients with Acute Myocardial Infarction at critical care units and emergency department at Public Teaching Hospitals in Khartoum State (2013)

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ABSTRACT

The aim of this study was to assess the knowledge, attitude and skill of the nurses whom work at CCU and emergency department (EM) in 2012. The standardized administered questionnaire was used for data collection. The level of knowledge of 139 nurses working at the critical care units and emergency department at Public Teaching Hospitals in Khartoum State was assessed. The data was processed using the statistical package software (SPSS); version 19. For the analysis, Chi-Square test was used, P-value <0.05 was considered statistically significant.

Results showed that 32% of study population had very poor level of knowledge, while 44% had poor level whereas 12% had a good level. 42% had good knowledge about acute coronary syndrome’s components while 10% were at poor level and 16.5% were at very poor level. In the same manner half of them their knowledge about initial management of acute myocardium infarction was poor level, while (21%) had good knowledge. Also the study population knowledge’s about arrhythmias that occur at initial phase was very poor (39.6%), poor (27.3%) and there was no one at a good level, Lastly their knowledge about the factors which lead to delay of emergency management of AMI was (40.3%) at poor level, (27.3%) at very poor while only (5.8%) at good level.
Conclusion: Universally the study population had poor level of knowledge about emergency care of patients with acute myocardial infarction.

INTRODUCTION

Cardiovascular disease remains a major healthcare problem and one of the most consumers of the public health resources. Ischemic heart diseases (IHD) remain the commonest cause of death all over the world. As in statistical reports of world health organization (WHO); 2011 the rate of death per 100,000 due to coronary artery diseases was 238.5 in Yemen, 212.0 in Sudan, 203.7 in Bangladesh, 199.3 in Libya and 162.5 in Jordan; [1].

While 114,000 people in the UK are admitted to hospital with acute coronary syndrome (ACS) annually [2]ACS is composed of unstable angina (UA), non ST-segment elevation myocardial infarction (NSTEMI) and ST-segment elevation myocardial infarction (STEMI) [3, 4, and 5].

An acute myocardial infarction (AMI) is an emergency situation requiring immediate diagnosis and treatment; it is caused by complete blocked of the coronary artery due to a thrombus attached to a ruptured plaque. In some instance acute myocardial infarction (AMI) occurs due to physiologic stress [5,6,15]. Also there are a number of risk factors known to predispose to the AMI, it is important that the patients presenting with acute myocardial infarction treated promptly [3, 7]. So initial therapy should focus on stabilizing the patient's condition, relieving ischemic pain and providing antithrombotic [8, 9, 10].

Some complications may occur immediately following the heart attack or may need a time to develop [11]. The goals of care are to master any potential life-threatening complications for instance ventricular fibrillation and to minimize the time to reperfusion [12]. In the USA, it was reported that the incidence rates of STEMI decreased between 1997 and 2005 from 121 to 77; in some instances the management of acute myocardial infarction continues to undergo major changes. Good practice should be based on sound evidence.

According to measurement criteria of American Association of Critical-Care Nurses (AACN) acquires and maintains current knowledge and competency in the care of acutely and critically ill patients. The nurse participates in ongoing learning activities to acquire and
refine the knowledge and skills needed to care and seeks learning opportunities that reflect evidence-based practice in order to maintain clinical skills and competencies. So the nurse engages in a self-assessment and formal performance appraisal on a regular basis own nursing practice in relation to professional practice standards, institutional guidelines, rules, and regulations to identifying areas of strength as well as areas where professional development would be beneficial\cite{13,14}.

The overall aim of this study is to assess the knowledge attitude and skills of nurses who work at CCU and ER during emergency management for patients with acute myocardial infarction. In order to identify the gaps regard nursing care and to search for solutions with expertise and policy makers to construct plans and strategies to fill the gaps and to fulfillment high quality nursing care.

**Justification:**

- Critical illness requires life-saving intervention and application of high technology medicine and intensive nursing within a specialist critical care unit.\cite{16}
- Health care services are provided to patients in an environment with complex interactions among many factors, such as the disease process itself, clinicians, technology, policies, procedures, and resources. When these complex factors interact, harmful and unanticipated errors can occur. By definition, errors are a cognitive phenomenon because errors reflect human action that is a cognitive activity. Near misses, or “good catches

**MATERIALS AND METHODS**

The current study was descriptive hospital based, conducted at five teaching public hospitals (KTH, KNTH, OTh, Ahamed Gasium and Elshaap hospital) at Khartoum state during the period between 2012 and 2013. The study populations were all nurses, with both genders, who were worked at critical care units and emergency departments. The total coverage sampling technique was included all the nurses fulfilling the inclusion criteria. The total sample size mounted to 139. The study variables included age, gender, qualification, nursing experience and period of work
at critical care units, training, and knowledge: definition of ACS, components of acute coronary syndrome, initial management of acute myocardial infarction, thrombolytic and arrhythmias. A standardized questionnaire was administered and it was closed ended one which pre-tested prior to the data collection.

An ethical clearance was obtained from the institutional review board, written consent for all of ministry of health managers, leaders of the hospitals as well an informed consent was obtained from participants before being interviewed. The collected data was processed and analyzed using SPSS computerized package version 19.

RESULT

Figure (i). Acute coronary syndrome (ACS) level of knowledge of the study population
Figure (ii): Level of knowledge of the study population about ACS components.

Figure (iii): Acute myocardium infarction initial management level of knowledge of the study population
Figure (IV): Level of knowledge of the study population about arrhythmias that can occur at initial phase of acute myocardial infarction.

Figure (v): Level of knowledge of study population about factors that lead to delay of acute myocardial infarction management
Table (1): Assessment of knowledge about acute MI (n=139)

<table>
<thead>
<tr>
<th>Items</th>
<th>Average</th>
<th>StDev</th>
<th>Benchmark</th>
<th>T-value</th>
<th>P-value</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nature</td>
<td>0.921</td>
<td>1.022</td>
<td>2</td>
<td>12.45</td>
<td>0.000</td>
<td>Significant difference</td>
</tr>
<tr>
<td>2. Components</td>
<td>1.99</td>
<td>1.09</td>
<td>2</td>
<td>0.078</td>
<td>0.938</td>
<td>Insignificant difference</td>
</tr>
<tr>
<td>3. Initial drugs given</td>
<td>2.287</td>
<td>1.22</td>
<td>3</td>
<td>6.87</td>
<td>0.000</td>
<td>Significant difference</td>
</tr>
<tr>
<td>4. Thrombolytic agent</td>
<td>0.410</td>
<td>0.49</td>
<td>1</td>
<td>14.09</td>
<td>0.000</td>
<td>Significant difference</td>
</tr>
<tr>
<td>5. Arrhythmias occur at the initial phase of AMI (VF, VT)</td>
<td>0.935</td>
<td>0.853</td>
<td>1</td>
<td>0.895</td>
<td>0.372</td>
<td>Insignificant difference</td>
</tr>
<tr>
<td>6. Problems led delay of management</td>
<td>1.230</td>
<td>1.098</td>
<td>2</td>
<td>8.259</td>
<td>0.000</td>
<td>Significant difference</td>
</tr>
</tbody>
</table>
Table (2): Level of knowledge of the study population overall factors about acute myocardial infarction versus training (n=139) (summary table)

<table>
<thead>
<tr>
<th>Items</th>
<th>level of knowledge of AMI</th>
<th>X²</th>
<th>Correlation (r)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very poor</td>
<td>Poor</td>
<td>Fair</td>
<td>Good</td>
</tr>
<tr>
<td>Nature of ACS</td>
<td>38%</td>
<td>29%</td>
<td>19%</td>
<td>14%</td>
</tr>
<tr>
<td>Components</td>
<td>0.0%</td>
<td>9.5%</td>
<td>14%</td>
<td>76%</td>
</tr>
<tr>
<td>Initial drugs given to manage AMI</td>
<td>0%</td>
<td>38%</td>
<td>33%</td>
<td>29%</td>
</tr>
<tr>
<td>Thrombolytic agent</td>
<td>0%</td>
<td>57%</td>
<td>0%</td>
<td>43%</td>
</tr>
<tr>
<td>Initial arrhythmias (VF, VT)</td>
<td>20%</td>
<td>0%</td>
<td>33%</td>
<td>47%</td>
</tr>
<tr>
<td>Problems led delay of management</td>
<td>24%</td>
<td>43%</td>
<td>33%</td>
<td>0%</td>
</tr>
</tbody>
</table>

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**Table (3):** Level of knowledge of the study population overall factors about acute myocardial infarction versus experience

<table>
<thead>
<tr>
<th>Items</th>
<th>Good level of knowledge versus experience /years</th>
<th>$ \chi^2 $</th>
<th>P value</th>
<th>Correlation (r)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;3</td>
<td>3 -5</td>
<td>6 -8</td>
<td>9+</td>
<td></td>
</tr>
<tr>
<td>Nature</td>
<td>0%</td>
<td>7.7%</td>
<td>13.7%</td>
<td>13.380</td>
<td>0.146</td>
</tr>
<tr>
<td>Components</td>
<td>16.7%</td>
<td>0%</td>
<td>15.4%</td>
<td>16.392</td>
<td>0.059</td>
</tr>
<tr>
<td>Initial drugs given</td>
<td>0%</td>
<td>0%</td>
<td>15.4%</td>
<td>6.315</td>
<td>0.389</td>
</tr>
<tr>
<td>Thrombolytic agent</td>
<td>16.7%</td>
<td>50.0%</td>
<td>7.7%</td>
<td>46.2%</td>
<td>8.758</td>
</tr>
<tr>
<td>Initial arrhythmias (VF, VT)</td>
<td>16.7%</td>
<td>0%</td>
<td>23.1%</td>
<td>35.9%</td>
<td>4.574</td>
</tr>
</tbody>
</table>

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DISCUSSION

The results of the current study revealed that the majority of nurses had poor level at the overall variables of the knowledge such as nature of acute coronary syndrome and its components, initial drugs to be administered for management and the drug of choice use for reperfusion. On the other hand, their knowledge of factors which may lead to the delay in management of acute myocardial infarction and arrhythmias that can occurs at initial phase of an acute myocardial infarction was low.

When we compared the experience and the training which the study population received, and their effect on the level of knowledge the result revealed that, differences were insignificant with regard to their knowledge about nature, initial drugs, thrombolytic agent and problems led delay of management; while a significant differences regarding component of ACS and arrhythmias occur at initial phase was seen with however poor most of the levels of knowledge. This means that, the training was ineffective especially training with regard to management of AM. Nevertheless, the scope of training was universally drawing the attention of specialized and academic centers to improve the quality of service provided. Accordingly, American heart association’ guidelines 2010, for Cardiopulmonary resuscitation the evaluation and management of acute coronary syndromes (ACS) were intended to define the scope of training for healthcare providers who treat patients with suspected or definite ACS within the first hours after onset of symptoms. [4]

Comparing the experience which the study population received and its effect on the level of knowledge demonstrated insignificant understanding about nature and initial drugs; while a significant differences about component of ACS, arrhythmias occur at initial phase
thrombolytic agent problems led delay of management with significant positive correlation. i.e., positive effect of experience on the level of knowledge.

In accordance with other studies looking at poor training, the level of knowledge with experience of physician’s knowledge base out of training implicated to be decreases with time. An illustrative study included 289 internal medicine generalists and specialists who had received board certification from the American Board of Internal Medicine (ABIM) within the previous five to 15 years and were given an 82-question multiple choice examination. Knowledge declined over time, with a significant inverse correlation between examination scores and the number of years elapsed since ABIM certification. However, studies evaluating the relationship between clinical knowledge and experience have generally concluded that the decline in knowledge is accompanied by a decrease in quality of care. \[17\]

In conclusion the population of this study had poor knowledge at the overall variables about acute myocardial infarction with insignificant differences with inverse correlation with training as well as positive correlation with experience. The inability to keep up with evolving medical knowledge has potentially serious implications on quality of care.

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My special thanks are extended to the observers whom help me in a collection of data. Mergani, Heba, Hagir and Magda

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10. Thomas J Ryan, MD, 2011),Initial Evaluation Management of Suspected Acute Coronary Syndrome in the Emergency Department , Boston University School of Medicine chest pain or discomfort.


