

Proficiency of ICU and ER Nurses in Performing ECG Procedure and Nursing Management in Selected Hospitals in Iligan City

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Abstract

This study determined the proficiency of ICU and ER nurses in performing ECG procedure and nursing management at the basic level. A total of 66 respondents were asked to participate in the study. The respondents were ICU and ER nurses working at the Gregorio T. Lluch Memorial Hospital, Mindanao Sanitarium and Hospital, Dr. Uy Hospital Inc. and the Iligan Medical Center Hospital. A 54-items questionnaire was used as an instrument in the collection of the data. It divided into 3 parts evaluating the respondents' knowledge on the fundamentals of ECG test including a 12-lead placement, nursing management and the basic interpretation of rhythm strips. The respondent's profile such as age, gender, marital status, and level of education, and their work related status such as the area of assignment, years of experience as an ICU/ER and frequency performing the test were also obtained. Confidentiality was assured of the identities of the respondents as well as the individual test results. Results revealed that the over-all total average score yielded a mean proficiency of 58.02% of the respondents who took part in the study. This was below the expected range of 75% and clearly showed the insufficiency of ICU and ER nurses on the knowledge and skill on the ECG

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test. Findings suggested the need of a skill enhancement program and continuing education among ICU and ER nurses to render an improved quality nursing care to patients.

Keywords: electrocardiogram, heart, intensive care unit, emergency room

Introduction

According to the National Statistics Office, cardiovascular disorders ranked as the leading cause of death in the Philippines affecting thousands of Filipinos each year. The responsibility of caring for patients with these disorders pervading every area of nursing practice. As a result, cardiovascular care ranked as the most rapidly growing areas of nursing. In cardiovascular emergencies, nurses may perform or assist with cardiopulmonary resuscitation, defibrillation, cardioversion and temporary pacing. Carrying out these life-saving procedures calls for in-depth knowledge of cardiovascular anatomy, physiology and equipments as well as sound assessment and intervention techniques. Only nurses with up to date information and sharpened skills could provide safe and effective care (Allen et al., 2009).

An electrocardiogram or ECG records the electrical impulses that stimulate the heart to contract. The ECG is helpful in diagnosing and monitoring the origins of pathological rhythms, myocardial ischemia, myocardial infarction and other cardiac disorders (Fischbach, 2004). Electrocardiograms are used in most patient areas, including labor & delivery and pediatrics, so all nurses and caregivers should understand the heart's electrical messages that are displayed on cardiac monitors (Dubin, 2009). It is vital for nurses to review their skills of ECG recording to ensure accuracy and thoroughness (Jevon, 2003).

Quick response to any cardiac symptoms or complaints was essential in giving appropriate and timely treatment. Taking an ECG should be second nature to staff in emergency room, medical units and cardiac care units (Altman, 2004). Furthermore, if you are an ICU or ER nurse you should be able to pick up an ECG and be able to tell whether the patient is having an MI (Porter, 2009).

The importance of learning ECG cannot be understated. As the acuity of hospitalized patients increased and hospitals added more monitored beds, the expectation for all nurses to be able to interpret

ECGs accurately had risen dramatically. Indeed, as more nurses became nurse practitioners and clinical nurse specialists, they needed to learn to interpret ECGs (Moser, 2004).

In response to the various literatures stating the implications of ECG among nurses, a study entitled "Testing nursing knowledge on performing 12 lead ECGs," was conducted by Leanne Amos, RN, Certified Midwife, Coronary Care Certificate, ACN in St. Vincent's Hospital, Sydney with a purpose that is to determine whether ward nurses have adequate knowledge to perform 12 Lead ECGs and interpret them at a basic level. Findings suggested in-service education as a requirement since overall knowledge was insufficient and the most relevant questions relating to nursing care and patient outcomes were answered most poorly. In conclusion, good patient care dictates that nurses have a basic knowledge of ECG recording and interpretation. Even with technological advances providing electronic ECG interpretation, nurses maintain a responsibility for understanding the significance of changes in the patient's condition and responding appropriately. Knowledge of ECGs contributes to the nurse's confidence in recognizing and managing effectively the contingencies of patient care in a busy teaching hospital.

The results of the study clearly showed a significant problem among nurses regarding their inadequacy in the knowledge and skill on ECG test and with this, the researchers would like to stress its importance by also determining the proficiency of ICU and ER nurses in performing ECG procedure and nursing management in this locality. In this manner, the researchers will found out if the same problems existed and to provide further evaluations. An extensive search of the literature failed to locate previous research addressing the issues of ECG performance by nurses here in the Philippines. Thus, the importance aroused the interest of the researchers and therefore prompted to conduct this study.

Conceptual Framework

The following figure provides a structural foundation governing this study. Furthermore, it evaluates the knowledge on performing ECG test and management according to the qualifications of the registered ICU and ER nurse in the clinical setting.

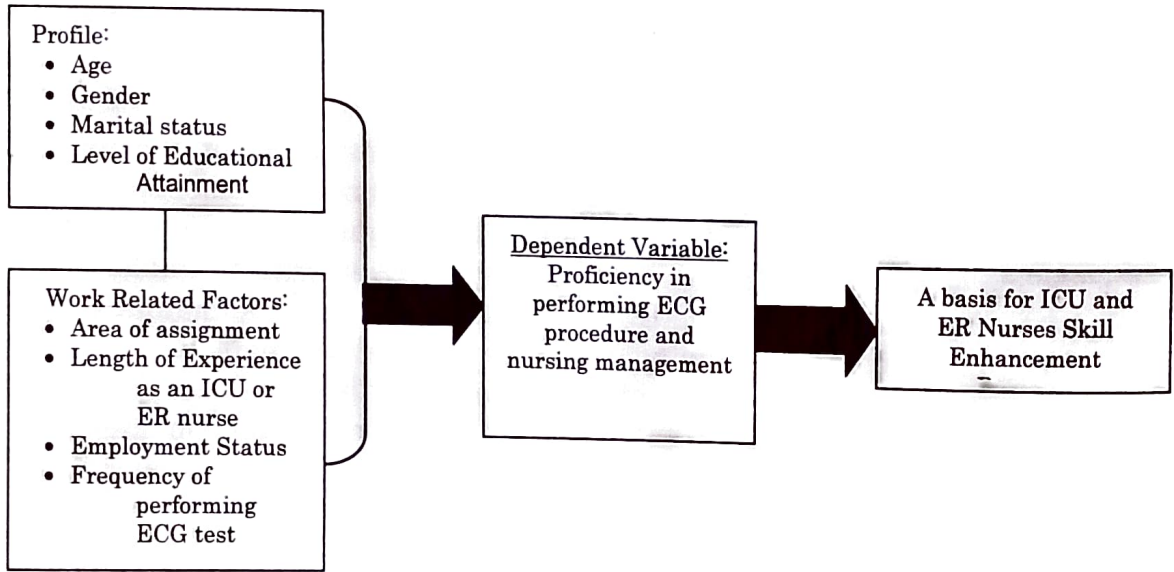


Figure 1.5 Conceptual Framework

As seen in the framework, the variables are classified into two groups namely the profile and the work-related factors. In this manner, the variables will be emphasized and clearly defined. Age, gender, marital status and level of educational attainment are classified as the respondent’s profile while area of assignment, length of experience as an ICU and ER nurse, employment status and frequency of performing ECG test are the work related factors. The profile and the work related factors are identified as the independent variables and will be correlated with the dependent variable known as the proficiency in performing ECG procedure and nursing management. The relationship between the

variables will be determined as a basis for ICU and ER nurses' skill enhancement program.

Objectives of the Study

This study generally aimed to assess the proficiency of ICU and ER nurses in performing ECG procedure and nursing management in selected hospitals in Iligan City.

Specifically, this study sought:

1. To identify the profile of the respondents in terms of:
 - 1.1 Age
 - 1.2 Gender
 - 1.3 Marital Status
 - 1.4 Level of Educational Attainment
2. To determine the Work Related Status of the respondents in terms of:
 - 2.1 Area of assignment
 - 2.2 Length of Experience as an ICU/ER nurse
 - 2.3 Employment Status
 - 2.4 Frequency of performing ECG test
3. To find out the respondent's proficiency in performing ECG procedure and nursing management.
4. To establish if there is a significant relationship between the profile of the respondents to the proficiency in performing ECG procedure and nursing management.
5. To find out if there is a significant relationship between the work related status of the respondents to the proficiency in performing ECG procedure and nursing management.

Scope and Limitations of Study

This study focused on determining knowledge of ICU and ER nurses in performing ECG test and nursing management at a basic level. A 54-items questionnaire was used as an instrument in the conduction of this study. The standard 12-lead ECG was used to have uniformity and consistency of the questions. The study was conducted from November to January 2010.

These ICU and ER nurses were working in Mindanao Sanitarium and Hospital (MSH), Dr. Uy Hospital Incorporated (DUHI), Iligan Medical Center and Hospital (IMCH) and Gregorio T. Lluich Memorial Hospital (GTLMH).

The respondents must have passed the Nursing Licensure Examination and classified as a regular, contractual, reliever and a volunteer. The study participants were below 65 years of age. A total of 66 respondents would be asked to participate in the said study. The selection of the respondents would be based on their availability and willingness to participate.

The subjects are categorized according to their age, gender, marital status, length of work experience as an IUC/ER nurse, area of assignment, level of educational attainment, area of assignment, type of employment and the frequency of performing the test. Nurses working in the PACU, RR, NICU and ward were not included in the scope of the study. Furthermore, variables such as type of working institution and trainings and seminars attained by the respondents were excluded from the scope of the study.

Related Studies

Foreign

A study entitled "Testing nursing knowledge on performing 12 lead ECGs," by Leanne Amos, RN, Certified Midwife, Coronary Care Certificate, ACN in St. Vincent's Hospital, Sydney. The purpose of this study was to determine whether ward nurses have adequate knowledge to perform 12 Lead ECGs and interpret them at a basic level. The nurse practitioner attending an ECG contributes to total patient care, allowing detection of dangerous situations, recognition of changes in clinical condition and requests for appropriate intervention. An availability study of 40 nurses with experience ranging from one to four years or more were surveyed. They were selected at random from ward areas which documented using the ECG machine most frequently out of hours. The individuals were instructed to complete a 14 item questionnaire on basic 12-Lead ECG knowledge. Reasons for attending ECGs in ward areas, and previous in-service education were elicited. Anonymity was assured, and the questionnaire completed by staff in normal ward conditions, as opposed to exam-like conditions. Results revealed that overall knowledge was insufficient, considering the percentage of ECGs attended for chest pain. The most relevant questions relating to nursing care and patient outcomes were answered most poorly, with little variation between the group attending in-service and those not. Lead placement is fundamental knowledge for all those performing ECGs, regardless of their ability to interpret ECGs. Only 15% of those surveyed correctly placed the leads. Also, the majority of nurses were keen to be part of a research questionnaire until the topic of ECGs was mentioned. Almost half the subjects refused or were reluctant to participate. This may be due to 'fear of the unknown'. The purpose was to detect the need for educational assistance, not to threaten or intimidate nurses, which, unfortunately, was the general consensus.

Findings suggested in-service education as a requirement and desired by the participants. In conclusion, good patient care dictated that nurses have a basic knowledge of ECG recording and interpretation. Even with technological advances providing electronic ECG interpretation, nurses maintained a responsibility for understanding the significance of changes in the patient's condition and responding appropriately.

Knowledge of ECGs contributed to the nurse's confidence in recognizing and managing effectively the contingencies of patient care in a busy teaching hospital.

Another study entitled "District nursing teams Clinical practice initiative: Domiciliary Electrocardiogram (ECG) Recording", by the District Nursing Services in Birmingham. The study aimed to provide early detection and intervention for Heart failure in house bound patients leading to more effective treatment and reduced hospital bed stay with improvement on the District Nurses' knowledge and skills to perform a domiciliary ECG service for house bound patients. The Target patient group was 24 House bound patients on the District nurse caseload. The district nurses to record domiciliary ECGs underwent successful completion of training and ECG competency framework. The ECG was recorded at the patient's convenience and comfort in their own home, immediate interpretation was provided with Referral to the General Practitioner for clinical management. Outcomes of the study revealed that 24 housebound patients have had an ECG recorded at their own convenience and comfort; they appreciated not having to worry about transport and cared arrangements for a hospital visit. In collaboration with the GP, interpretation and management plan were done within 24 hours of the recording. At the time of recording the ECG the CHD facilitator can be contacted by the Community nurse if there are any immediate concerns.

Research Design

This study used a descriptive-survey and correlational design. The use of this design was to measure the extent of the association existing between variables. It identified the existence of a relationship between variables.

In this study, the respondent's profile and work related factors in terms of age, gender, marital status, length of work experience as an IUC/ER nurse, area of assignment, level of educational attainment, area of assignment, type of employment and the frequency of performing the ECG would be correlated with their proficiency in performing ECG test and management.

A questionnaire was distributed to 66 ICU and ER nurses working in selected hospitals in Iligan City with the use of purposive sampling. This questionnaire was used to identify their proficiency in ECG interpretation and management.

Respondents and Sampling Procedure

The respondents of the study were registered nurses at selected hospitals in Iligan City. The respondents may be a regular, contractual or a volunteer considering they have passed the Nursing Licensure Examination. A total of randomly selected 66 respondents were asked to participate in the conduction of this study. The number of respondents was dependent on the total number of registered nurses employed in the hospital. 1/3 of the total population of registered nurses in each hospital results to the number of respondents taken in every hospital as seen in the following table:

Table 3.1 Distribution of study population per hospital

HOSPITAL	TOTAL POPULATION OF REGISTERED NURSES	PERCENTAGE TAKEN FOR SAMPLE POPULATION	RESPONDENTS PER HOSPITAL
GTLMH	26	31%	15
MSH	21	25%	21
IMCH	15	19%	9
DUH	21	25%	21
TOTAL	85	100%	66

Method of Data Collection

A letter of consent was given to the directors and chief nurses of Gregorio T. Lluich Memorial Hospital, Dr Uy Hospital Incorporated and

Mindanao Sanitarium and Hospital to seek permission in conducting this study. A sample of the questionnaire was also shown to the chief nurses for their approval and any revisions for the betterment of the questionnaire were appreciated. A pilot test was conducted to 10 registered nurses that would examine the initial response to the study for further evaluation. The pilot test was conducted at Dr. Uy Hospital and revisions were made after the results and based upon the responses of the nurses. The results of the test were also shown to the chief nurses. Another letter for the respondents was shown as a formal request to participate in the study. Demographic data was gathered from the 66 registered nurses and the respondents were given a 54-item questionnaire which they must answer in 1-hour. The researchers gathered data every other day every other shift. The study took 2 months for the researchers to fully and completely collect the data. Confidentiality of the identities of the respondents as well as the individual test results was assured. The selection of the respondents was based on their availability and willingness to participate in the study.

Research Instrument

This study used a questionnaire in which the problems were taken from the review questions of the book, "12-Lead EKGs" by Beasley of 2006, to test the registered nurses' knowledge on performing ECG. The respondents were asked to answer a 54-items questionnaire. Each correct answer is given 1 point. The questions constructed are guaranteed to be at a basic level. The questionnaire comprises of 3 parts. Part I evaluates the respondent's knowledge on the fundamentals concerning ECG test and management. It is a multiple choice type of test. Questions include common terminologies and information with relation to the ECG, nursing responsibilities on the procedure as well as clinical situations for the determination of the respondent's priority interventions and management. Part II comprises of 4 basic rhythm strips where in the respondents were asked to interpret. The skill on basic interpretation is necessary as detection of any abnormalities is only the initial action for immediate interventions. Part III enabled the respondents to label appropriately the PQRST waveforms and chest lead ECG placement.

Identification of the different waveforms and proper chest lead placement is the basis for accurate ECG interpretation. The respondents were given 60 minutes to answer the test. The respondent's profile with age, gender, marital status, and level of education, and their work related status such as the area of assignment, years of experience as an ICU/ER and frequency performing the test were also obtained.

Conclusion

Overall, the results implied that there were fundamental deficiencies in the ECG test and management proficiency of ICU/ER nurses working in different hospitals in Iligan City. The biggest factor in which the respondents had a difficult time in answering the given questionnaire was time constraints and workload during the survey. Respondents had difficulty answering the test for ER department has always been busiest or patient-loaded unit in the hospital and also the ICU nurses tended to and must supervise their patients continuously during their shifts. They had a hard time focusing on the questions and they might have not analyzed and interpreted the questions well. Therefore, it was expected the nurses would have low scores. Therefore, there is a need for the nurses to improve the proficiency on this nursing field and the need for their continuous education to maintain their efficiency in nursing practice.

Recommendations

The results of the study showed a deficiency among ICU and ER nurses' proficiency with regards to the knowledge and skill in performing ECG test and management therefore several recommendations are made in the following areas:

Hospital Administrators. Emphasis and awareness of the basic ECG test in different hospitals as well as other institutions must be raised for the growth of the nursing profession. A skill enhancement program among ICU and ER nurses is needed to be imposed to render quality nursing

care especially to critically ill-patients. Conduction of additional trainings and seminars is proposed to address this problem. Trainings like BLS, ACLS and the like will help ICU and ER nurses improve their range of capability in performing ECG test and its nursing management.

Regular competency evaluation and assessments should also be done among the ICU and ER nurses to identify weaknesses, limitations and areas that need improvement to stress out the importance of retaining basic knowledge and skill on ECG test.

These competency evaluations and assessments should first focus on the knowledge about nursing responsibilities, implications and considerations in performing ECG test. Basic components of ECG waveforms and basic ECG interpretation as well as appropriate nursing interventions and management for any problems and situations which require immediate action must be known. Critical thinking among ICU and ER nurses must be practiced and applied. Second, the skill must be considered to know the application or implementation of nursing care given. Basic placement of standard 12 lead chest and limb electrodes, the color coding of the electrodes and the importance of the leads must be incorporated since misplacement can severely alter the results.

There should be constant supervision of hospital administrators, chief nurses and head of ER and ICU departments to update and monitor the ability and proficiency of ICU and ER nurses.

ICU Nurses. The results of the study must be perceived as motivation to enhance nursing skills. ICU nurses should possess the ability to accept their deficiency and be open to further improvements. The pursuit of continuous education through trainings and seminars about performing ECG test and management is suggested among ICU nurses. Continuous learning is the responsibility of each practicing nurse. Constant updating and growth are essential to keep abreast of scientific and technological change and changes within the nursing profession. In-depth knowledge and skill are required of ICU nurses so that they can assess and monitor the patient closely in order to identify subtle changes in a patient's condition that warrant immediate intervention. The ability to interpret, integrate and respond to a wide array of clinical information are necessary qualities of an ICU nurse. This provides for the personal and professional development of a nurse and must not be taken for granted.

ER Nurses. This is true with ICU nurses in their participation in formal or non-formal education, trainings and seminars to ensure that patients get the quality of care they deserve. ER nurses attend to an incredible range of trauma and other extreme situations requiring medical intervention therefore a basic knowledge about ECG procedure and nursing management will greatly help in caring for patients in need of cardiac monitoring. Sufficient information regarding ECG is essential since an ER nurse is expected to be multi-skilled and quick-thinking.

Nurse Educators. Curricular education enhancement is suggested to stress the importance of acquiring the fundamental knowledge on performing ECG test and nursing management among student nurses as it is in the school wherein the theoretical foundations are acquired. This topic must be taught properly and incorporated in nursing subjects to provide a background and basic knowledge to the future nurses.

Awareness to student nurses regarding ECG importance must be done. Evaluation of the students' baseline knowledge and skill should be obtained to identify areas of weakness to provide a room for immediate improvement.

Education and learning of ECG test and management should utilize various approaches such as return demonstrations, workbooks, study groups, lecture and review. The learning process must be made interesting as a teaching strategy for clinical instructors to increase their interest to learn and realize its significance.

Student Nurses. Acquiring knowledge about performing ECG test and nursing management by reading books, surfing the internet and other resources is advised to enhance their knowledge on ECG. Also, frequent exposure to the use of ECG especially in critical care areas will be of great help to students. Motivation and readiness to learn are key areas that student nurses must possess to inspire them in obtaining more knowledge and be competent nurses in the future.

Future Researchers. Future researchers' should develop questionnaires that are not too long for the respondents to participate in the study. The use of standard questionnaires is suggested to increase the validity of research results. The questionnaires should also include the basis and

significance of the study for the respondents to be encouraged and be motivated to answer the survey.

Other factors that influence the proficiency should be identified such as work anxiety, trainings and seminars attained and workload of nurses during which the survey is conducted. Making student nurses in selected hospitals in Iligan City as respondents is also recommended to identify as early as possible any deficiencies regarding their knowledge of ECG.

Lastly, development of further research is advised to test the nurses' proficiency on other necessary knowledge and skills in the clinical area especially the updates and latest tests utilized by other tertiary hospitals in the Philippines.

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