A STUDY TO ASSESS THE COMPETENCY REGARDING ECG INTERPRETATION AMONG STAFF NURSES

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Abstract

A descriptive study was conducted to assess the competency regarding ECG Interpretation among staff nurses working in a selected Hospital, Ludhiana, Punjab. The objectives of the study were to assess staff nurses' level of competencies regarding ECG Interpretation. To assess staff nurses' level of competencies in terms of knowledge and skill regarding ECG Interpretation. To assess the co-relation of staff nurses' competences in terms of knowledge and skills regarding ECG Interpretation. To find out the relationship of staff nurses' competencies regarding ECG interpretation with personal & professional variables. To find out the relationship of staff nurses' competencies in terms of knowledge and skill regarding ECG interpretation with personal & professional factors. And to identify deficits and plan in-service education program to improve staff nurses' competencies regarding ECG interpretation. Conceptual framework of the study was based on " Three Phase Theory" described by Fitts and Posner (1967)". A quantitative approach and non-experimental exploratory design was adopted for the research study. Data was collected by using ECG Interpretation Competency Assessment Performa which was developed after extensive literature review, experts' validation and reliability and tested for reliability (r =0.78). The collected data from 200 staff nurses drawn by purposive sampling technique was organized, tabulated, analyzed and interpreted using descriptive and inferential statistics. Major findings of the study were majority (81,41%) of staff nurses were found to had low level of competency regarding ECG Interpretation. Majority of staff nurses had below average level of knowledge regarding ECG Interpretation (109,54.5%). Majority of staff nurses had low level of skill regarding ECG Interpretation (120,60%). Relation between knowledge and skill are strong positive correlation. Findings related to the relationship of competencies regarding ECG Interpretation with selected personal and professional factors were Staff Nurses competency and gender, Source of Learning were statistically significant at p<0.05 level. Staff Nurses competency and present posting, experience in cardiology statistically significant at p<0.01 level. Investigator prepared a validated and structured lesson plan and conducted an In- service Education for staff nurses working in Selected Hospital, Ludhiana, Punjab

Keywords*: Competencies, knowledge, skill, ECG Interpretation, staff nurses, in-service education*

BACKGROUND OF THE STUDY

Basic knowledge of the ECG is usually the most difficult to assimilate, as it implies learning the basis of interpretation. With technological advances, changes in provision of healthcare services and increasing pressure on critical care services, ward patients' severity of illness is ever increasing. As such, nurses need to develop their skills and knowledge to care for their client group. Competency in cardiac rhythm monitoring is beneficial to identify changes in cardiac status, assess response to treatment, diagnosis and post-surgical monitoring. Every nursing student, nurse must be aware of the importance of correlating clinical findings after a complete

examination with the ECG finding. A good basic ECG interpretation may rely on the ability to combine clinical skills with basic ECG interpretation **(Sharman J, 2007).**

The goal of ECG monitoring in hospital setting have expanded from simple heart rate and basic rhythm interpretation to diagnosis of complex cardiac arrhythmias myocardial ischemia and prolonged QT interval. ECG monitoring must be meticulously under taken. Potential consequences of poor technique include misinterpretation of cardiac arrhythmias, mistaken diagnosis, wasted investigations and mismanagement of the patient **(Jevon P, 1998).**Good patient care indicates 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 **(Lehmann MH, Suzuki F, Fromm SB, Frankovich D, et al, 1994).**

   o   *Objectives*

(1)To assess staff nurses' level of competencies regarding ECG Interpretation.

(2).To assess staff nurses' level of competencies in terms of knowledge and skill regarding ECG Interpretation.

(3) To assess the correlation of staff nurses' competences in terms of knowledge and skill regarding ECG Interpretation.

(4)To find out the relationship of staff nurses' competencies regarding ECG interpretation with personal & professional factors To find out the relationship of staff nurses' competencies in terms of knowledge and skill regarding ECG interpretation with personal & professional.

(5) To identify deficits and plan in-service education program to improve staff nurses' competencies regarding ECG interpretation.

MATERIALS AND METHODS

A descriptive design was selected to carry out the study. The sample for the present study was 200 staff nurses selected by non- probability purposive sampling technique in Christian Medical College & Hospital Ludhiana. Inclusion criteria: The sample included those staff nurses who were Registered GNM, B.Sc. or Post. B.Sc. Nurse Employees of CMC & Hospital involved in care of patients having more than 6 months' experience. Exclusion criteria: The sample excluded staff nurses who were Not willing to participate in the study and Who were not present at time of data collection. A structured questionnaire was developed to assess the staff nurses' competences regarding ECG Interpretation. An intensive review of the literature, experts' opinion, suggestions of the research panel, researchers' professional experience and informal interview with staff nurses provided basis for the construction of structured questionnaire. Description of Tool :ECG Interpretation Competency Assessing Questionnaire: The research tool consists of following two parts: Part 1: Personal & Professional Factors This consisted of 07 items for obtaining information of Personal and Professional variables such as Age, Gender, Professional Qualification, Total Professional Experience, Present Posting, Experience in Cardiology and Source of Learning.Part 2: ECG Interpretation Competency Assessment (EICA) Performa which consist of were 30 items in two parts. Section A: Knowledge items related to ECG Interpretation which deals with15 items related to knowledge related to ECG Interpretation. Section B: Items regarding skill of ECG Interpretation that contains 15 items with various ECG strips.

Before the data collection , Formal administrative permission was obtained from the Principal and nursing superintendent of CMC Ludhiana. Content validity of the tool was taken by experts' opinion regarding the relevance, significance, clarity, construction and organization of questions. Reliability of the structured questionnaire was computed by applying split half (odd-even) method and was calculated by Karl Pearson's co-efficient correlation and Spearman Brown Prophecy formula and was found reliable with the value of r'=0.78. Prior to the data collection the subjects were approached, the purpose of the study was explained to them and their consent for participation was obtained.

RESULTS
**Findings related to sample characteristics**
Majority of staff nurses mostly 21-30 years of age (64%), females (79.5%) with GNM training (71.5%), did not have experience in cardiology (71%). Most of them had more than 5 years of experience (44.5%) and presently posted in Critical Care area (46.5%). Most of the staff nurses had classroom Source of Learning related to ECG Interpretation (36.5%).
(36.5%).

Findings related to Assessment of Competencies
Maximum number (41%) of staff nurses had low level of competencies regarding ECG Interpretation.Majority (54.5%) of staff nurses had below average level of knowledge regarding ECG Interpretation.Most (60%) of staff nurses had below average level of skill of ECG Interpretation.(Fig1)

Fig 1: Percentage distribution of Staff Nurses according to levels of Competencies regarding ECG Interpretation.
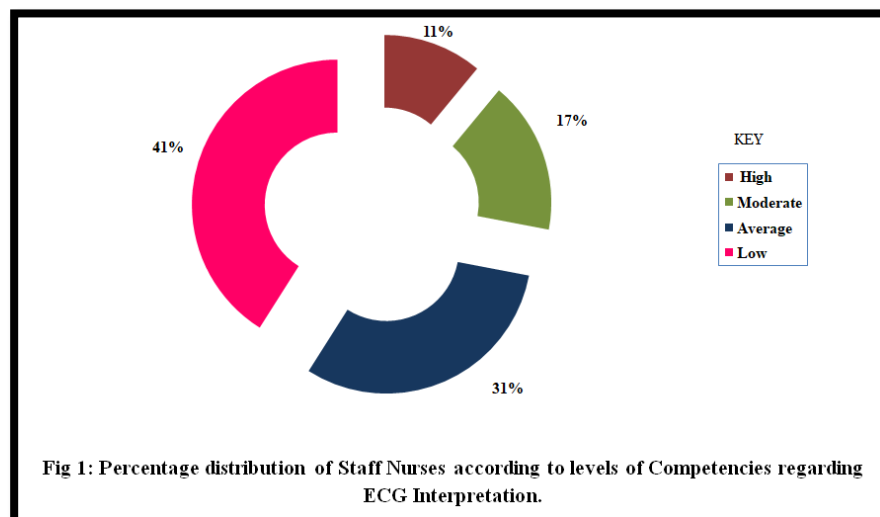
Relation between knowledge and skills are strong positive correlation means knowledge and skill are interrelated, as the knowledge increases the skill of ECG Interpretation also increases.(Fig2)

Fig 2: Correlation between the mean scores of knowledge and skill of staff nurses related to ECG Interpretation.
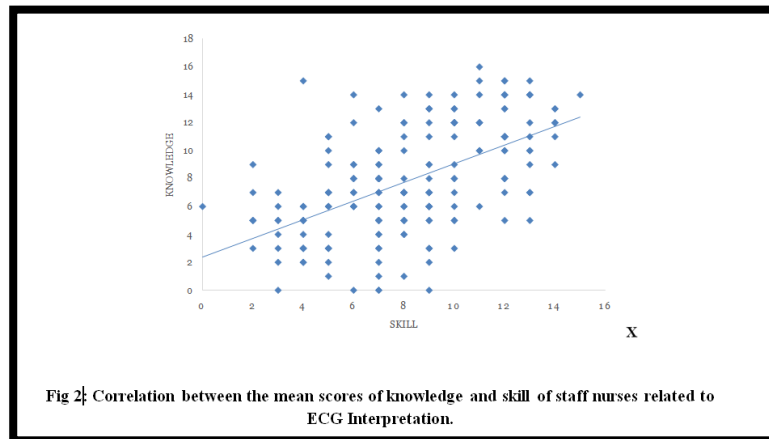
Findings related to the relationship of competency in terms of knowledge and skill regarding ECG Interpretation with selected variables.

Staff Nurses who have present posting in critical care areas have obtained highest mean knowledge score (8.97) followed by those who have present posting in OPD (8.46) and general wards (7.27). The calculated f value (6.76) was less than the table value (4.60) and statistically significant at $p < 0.01$ level. Hence, it can be concluded that staff nurses' knowledge score of ECG Interpretation was influenced by present posing in critical care areas as compare to General wards.

Staff nurses those who have experience in cardiology obtained highest mean knowledge score (9.16) followed by Staff nurses have no experience in Cardiology (7.81). The calculated z value (2.61) was more than the table value (2) and statistically significant at $p < 0.05$ level. Hence, it can be concluded that staff nurses' knowledge regarding ECG Interpretation was significantly influenced by experience in cardiology.

Staff nurses those who have experience in cardiology obtained highest mean skill score (9.66) followed by Staff nurses don't have experience in Cardiology (7.11). The calculated z value (4.26) is more than the table value (2.6). and statistically significant at $p < 0.01$ level. Hence, it can be concluded that experience in cardiology had an impact on staff nurses' ECG Interpretation skill score.

Staff Nurses who have present posting in critical care areas have obtained highest mean skill score (8.82) followed by those who have present posting in OPD (7.88) and general ward (6.81). Analysis was done with analysis of variance. The calculated f value (6.52) was less than the table value (4.60) and statistically significant at $p < 0.01$ level. Hence, it can be concluded that staff nurses' competency in terms of ECG Interpretation was influenced by present posting in critical care areas as compare to General wards.

Staff nurses who attended in service education obtained highest mean skill score (9) followed by those who had done self- study (8.93), classroom teaching (8.55), in rounds (7.9) in classroom teaching (6.53) learned regarding ECG Interpretation. The calculated f value (4.1) is less than the table value (3.32). Hence it is statistically significant at $p < 0.01$ level. Hence, it can be concluded that staff nurses' Competency regarding ECG Interpretation had impact on skill score of staff nurses those who attend Classroom teaching as compared with skill score of staff nurses those who attended Clinical teaching, Self-study and In- service education as Source of Learning.

Findings related to the deficits according to Competency areas

The staff nurses' deficits were mainly identified in the areas of knowledge regarding ECG Interpretation.

DISCUSSION

According to the present study maximum Staff nurses 82 (41%) had low level competency regarding ECG interpretation, 62(31%)Staff nurses had average level,34 (17%) had high level and 22(11%) of staff nurses have very high level of interpretation of ECG. majority of staff nurses had low level of ECG Interpretation. These findings were supported by **Kopec G,Magoń W, Hołda M, Podolec** conducted a web – based survey study was conducted in Poland aimed to assess skills in ECG interpretation among Polish medical students and to analyze the determinants of these skills. Conclusion of the study was Polish medical students in their clinical years their ability to recognize ECG signs of emergencies and common heart abnormalities was low.

Nursing Implications

High quality health care should be safe and effective as possible, and this should be highest priority for healthcare organizations. The implementation of measures that improve the competency of healthcare professionals would be a significant step in reducing the risk of Interpretation errors. The introduction of requirement for competency regarding ECG Interpretation to be regularly assessed would improve the competency of healthcare staff. This would also demonstrate a proactive approach by healthcare organizations to ensure the delivery of safe healthcare and help to reduce the risk of medication errors. The findings of the study have several implications which have been discussed in four areas: nursing education, nursing administration, nursing practice and nursing research. In all the areas, the role of the nurses is to improve the competency regarding ECG Interpretation.

- *Recommendations*

  Based on the findings of the study following recommendation are made:
  - o Implement & evaluate ongoing in-service education on competency regarding ECG Interpretation for nurses posted in critical care areas as well as general wards to improve competency regarding ECG Interpretation in staff nurses caring for patients in order to ensure patient safety and quality assurance in health.
  - o Educational research can be undertaken by using different designs such as experimental or comparative research design to find out the efficacy of different teaching learning methods for ISE on ECG Interpretation.

CONCLUSION OF THE STUDY

According to levels of competencies Majority of staff nurses had below average level of knowledge regarding ECG Interpretation. Most of staff nurses had low level of skill regarding ECG Interpretation. Maximum number of staff nurses had low level of competencies regarding ECG Interpretation.

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