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FROM MONITORING TO REPORTING: NURSES' ROLE IN CARDIAC RHYTHM SURVEILLANCE

[*]Marivic E. Ilarde
[**]Sylvia O. Lopez
[***]Jeffrey S. Evangelista
[****]Anthony C. Ramos
[*****]Alma Reina B. Rodriguez
[******]Marcellus C. Belisario
[*******]Ma. Concepcion Day

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Corresponding Author: Marivic E. Ilarde; doi:10.46360/globus.met.320252001

Abstract

Background: Continuous cardiac rhythm monitoring is a cornerstone of patient safety in critical care and telemetry units. Nurses are central to this process, as they are responsible for monitoring, interpreting, and reporting cardiac rhythms. However, discrepancies between nurses' confidence, adherence to protocols, and workload challenges may affect the reliability of telemetry monitoring and subsequent patient outcomes.

Aim: This study aimed to assess nurses' practices regarding cardiac rhythm monitoring across three domains: (1) monitoring practices, (2) interpretation of telemetry data, and (3) timely reporting of abnormal rhythms. The findings seek to identify strengths and gaps to guide nursing education, practice, and policy.

Methods: A descriptive quantitative design was utilized. Respondents included registered nurses with at least six months of experience in units requiring telemetry monitoring. Data were collected using a structured, validated questionnaire that measured practices across three domains on a five-point Likert scale. Descriptive statistics, including means and standard deviations, were used for data analysis. Ethical standards, including informed consent and confidentiality, were strictly observed.

Results: Findings revealed that nurses demonstrated strong practices in monitoring cardiac rhythms (M = 4.13, SD = 0.76) and timely reporting of abnormal rhythms (M = 4.17, SD = 0.69), with high confidence in rhythm identification, prioritization despite workload, and effective use of communication systems. However, interpretation of telemetry data yielded a neutral overall rating (M = 3.37, SD = 0.69), reflecting inconsistencies in training adequacy, protocol adherence, and consultation practices. Workload occasionally delayed reporting, but timely escalation remained a well-established practice.

Conclusion: Nurses exhibit competence in monitoring and reporting cardiac rhythms but face challenges in consistently interpreting telemetry data and adhering to protocols. Bridging the competence-confidence gap, strengthening training programs, reinforcing standardized guidelines, and addressing workload pressures are recommended to enhance patient safety and optimize nursing practice.

Keywords: Cardiac Rhythm Monitoring, Telemetry Interpretation, Nursing Practice, Patient Safety, Timely Reporting.

Introduction

Continuous cardiac monitoring is a critical component of patient care, particularly in high-risk units such as intensive care, emergency, and telemetry wards. Early detection and timely reporting of abnormal cardiac rhythms are essential for preventing adverse outcomes such as cardiac arrest, prolonged hospitalization, and even mortality (Funk et al., 2010). Nurses, as frontline healthcare providers, play a pivotal role in monitoring electrocardiographic (ECG) rhythms, interpreting findings, and escalating abnormal results to physicians or the healthcare team (Al-Kandari & Thomas, 2009).

Despite advances in monitoring technology, challenges persist in ensuring accuracy and reliability in rhythm interpretation. Studies indicate that while nurses often express confidence in recognizing abnormal rhythms, gaps exist in their ability to consistently interpret and act upon findings, partly due to limited formal training, workload pressures, and variability in protocol adherence (Christofidis et al., 2016; Nishimura et al., 2018).

*_*******College of Nursing, Our Lady of Fatima University, Valenzuela City Campus, Philippines.

Moreover, discrepancies between perceived competence and actual performance highlight the need to evaluate nurses' self-assessment of their practices in relation to monitoring, interpretation, and timely reporting (Purling & King, 2012).

The present study seeks to assess the practices of nurses regarding cardiac rhythm monitoring across three domains: (1) monitoring practices, (2) interpretation and protocol adherence, and (3) timely reporting of abnormal rhythms. By identifying strengths and gaps in these areas, this research aims to contribute to evidence-based recommendations for nursing education, training, and policy development, ultimately enhancing patient safety and quality of care.

Methodology

Research Design

This study employed a descriptive quantitative research design to systematically examine nurses' practices in monitoring, interpreting, and reporting cardiac rhythms. The design was chosen as it allows for the collection of quantifiable data reflecting nurses' self-reported behaviors and perceptions (Polit & Beck, 2021).

Respondents and Sampling Technique

The respondents were registered nurses working in hospital units where continuous cardiac monitoring is routinely performed (e.g., intensive care units, emergency departments, telemetry wards). A purposive sampling technique was applied to recruit participants who had direct responsibility for rhythm monitoring and interpretation. Inclusion criteria consisted of: (1) currently employed as a registered nurse, (2) at least six months of experience in units requiring cardiac monitoring, and (3) willingness to participate in the study.

Research Instrument

A structured questionnaire was developed based on related literature and validated by a panel of experts in cardiology nursing and nursing education. The tool consisted of three main sections:

1. **Monitoring Practices** (e.g., frequency of equipment checks, rhythm vigilance).
2. **Interpretation and Protocol Adherence** (e.g., confidence in identifying abnormal rhythms, reliance on guidelines, consultation with peers).
3. **Timely Reporting** (e.g., speed and consistency of escalating abnormal findings to physicians).

Each item was rated on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Reliability testing was performed using Cronbach's alpha, with coefficients above 0.80 considered acceptable for internal consistency (Tavakol & Dennick, 2011).

Data Gathering Procedure

Permission to conduct the study was obtained from hospital administration and nursing supervisors. After securing informed consent, questionnaires were distributed to participants and collected after completion. Data collection was scheduled during nurses' non-duty hours to minimize disruption to clinical responsibilities.

Data Analysis

Data were encoded and analyzed using descriptive statistics. Means and standard deviations were used to determine the overall ratings per domain, while frequency and percentage distributions summarized demographic profiles. Findings were interpreted using a weighted mean interpretation scale to identify whether practices were "very satisfactory," "satisfactory," "neutral," or required improvement.

Ethical Considerations

The study adhered to ethical standards in nursing research, including informed consent, voluntary participation, and confidentiality of responses (World Medical Association, 2013). Participants were assured that data would be used solely for research purposes and reported in aggregate form.

Analysis of Findings

Monitoring of Cardiac Rhythms

This category reflects that nurses generally demonstrate consistent practices in cardiac rhythm monitoring through telemetry. The results indicate a positive level of competency, with notable strengths in rhythm identification, prioritization, and equipment management. However, some areas still warrant improvement, particularly in adherence to hospital protocols. This shows that while monitoring is integrated into daily practice, consistency is not at the highest possible level. Some variability among respondents suggests occasional lapses due to competing demands, workload, or environmental factors. High confidence in rhythm identification indicates strong clinical judgment and competency. This strength is critical in preventing delays in interventions. However, confidence should be balanced with ongoing validation through training and peer collaboration to avoid misinterpretation or overconfidence. High confidence in rhythm identification indicates strong clinical judgment and competency. This strength is critical in preventing delays in interventions. However, confidence should be balanced with ongoing validation through training and peer collaboration to avoid misinterpretation or overconfidence. This finding highlight nurses' diligence in ensuring the accuracy of equipment, which directly supports patient safety. It reflects adherence to good practice standards, as

faulty telemetry may compromise clinical decisions. Nurses demonstrate resilience and prioritization skills despite workload demands. This suggests effective time management and recognition of telemetry's critical role in patient outcomes. However, it may also reflect the heavy reliance on individual effort rather than systemic support. I regularly follow hospital protocols regarding monitoring cardiac rhythms through telemetry (M = 3.04, SD = 1.45, Neutral). This item scored the lowest, revealing inconsistent adherence to protocols. The wide variability (high SD) suggests uneven practice across respondents. Possible factors include inadequate dissemination of guidelines, unclear policies, or gaps between theoretical standards and actual practice. Overall, nurses demonstrate strong confidence and vigilance in monitoring but may not consistently apply institutional protocols. This misalignment could create variability in patient care and should be addressed by reinforcing standardized policies and conducting regular competency checks.

Interpretation of Telemetry Data

This category presents mixed perceptions of competency. While confidence in distinguishing normal versus abnormal rhythms is high, there is a contrasting sense of neutrality regarding training adequacy and consultation practices. This suggests that while basic exposure exists, advanced or refresher training may be insufficient. This could limit nurses' ability to apply knowledge in complex clinical situations consistently.

The neutrality here indicates a possible hesitation to consult, which may be due to overconfidence, hierarchical barriers, or lack of a collaborative culture. This could pose risks when critical decisions are needed.

High confidence in interpretation reflects clinical strength but raises a paradox when paired with neutrality about training adequacy. This suggests a reliance on experience or intuition rather than structured learning, which could introduce inconsistencies.

Nurses generally disagree with needing further training, implying satisfaction with current skills. This finding, however, contradicts earlier neutrality on training adequacy, possibly reflecting overconfidence bias, where individuals perceive competence beyond actual performance levels. Strong reliance on guidelines demonstrates positive practice, ensuring objectivity and reducing errors. This highlights the role of structured tools in supporting safe and accurate clinical judgments. The overall neutrality in this category suggests a competence-confidence gap. While nurses feel confident in interpretation and follow guidelines, they simultaneously express uncertainty about their training. This mismatch indicates a need for structured, ongoing education and evaluation to align perceived and actual competency levels.

Timely Reporting of Abnormal Rhythms

This category reflects strong performance in reporting abnormal rhythms, with nurses demonstrating accountability and promptness despite workload challenges.

Prompt reporting is a critical safety measure, and the strong agreement indicates nurses' commitment to patient safety. This finding highlights the tension between workload and timely care. While most nurses deny delays, the wide variation (high SD) suggests that some experience real difficulty balancing competing demands. Nurses show strong adherence to immediate reporting, reflecting reliability and accountability in team-based care. The result indicates familiarity and competence with available communication tools, which is crucial in ensuring rapid escalation of care. The strong recognition of reporting's role in outcomes demonstrates alignment with professional values and standards of patient-centered care. The data suggest that timely reporting is a well-established practice among nurses, driven by awareness of its impact on patient safety. However, workload remains a significant stressor, which, in isolated cases, may hinder immediate reporting. Addressing staffing adequacy and workflow design can help mitigate these risks.

Nurses exhibit strong confidence in monitoring rhythms, high vigilance in reporting abnormalities, and reliance on guidelines in interpretation. Gaps exist in consistent adherence to hospital protocols and in reconciling confidence with training adequacy. There is a need for continuous education, competency validation, and policy reinforcement to standardize practices and reduce variability caused by workload or overconfidence.

Conclusion

This study demonstrates that nurses generally show strong competencies in monitoring cardiac rhythms and timely reporting of abnormal rhythms, reflecting their vigilance, prioritization skills, and commitment to patient safety. Nurses reported high confidence in identifying irregular cardiac rhythms, frequently checking equipment, and ensuring prompt communication with physicians and team members. These findings are consistent with previous studies emphasizing the critical role of nurses in early rhythm detection and timely intervention to prevent adverse outcomes (Al-Kandari & Thomas, 2009; Funk et al., 2010).

However, gaps were noted in protocol adherence and interpretation of telemetry data. While nurses expressed confidence in distinguishing normal from abnormal rhythms and relying on guidelines, neutrality regarding adequacy of training and hesitance to consult colleagues suggest the presence of a competence-confidence gap. This discrepancy has been reported in literature, where nurses may overestimate their abilities despite limited formal training in rhythm interpretation (Nishimura et al., 2018). The inconsistent adherence to hospital protocols also raises concerns about variability in clinical practice, which may affect standardization and patient outcomes (Christofidis et al., 2016).

Workload pressure was identified as a barrier to timely reporting, despite most nurses affirming promptness in escalation of abnormal findings. This reflects the broader issue of nurse staffing and workload strain, which has been documented as a factor influencing care quality and timeliness (Aiken et al., 2014).

In summary, the study concludes that while nurses demonstrate robust frontline monitoring and reporting behaviors, improvement is needed in protocol adherence, structured training, and workload management to ensure accuracy, consistency, and sustainability of patient safety practices.

Recommendations

For Nursing Education and Training

Implement simulation-based training programs on rhythm identification and interpretation to reinforce critical thinking under realistic conditions (Mariani et al., 2015). Offer continuing professional development modules focusing on updates in telemetry technology and international best practices (Murray et al., 2017). Encourage peer consultation and interdisciplinary collaboration to normalize seeking guidance and reduce interpretation errors (Purling & King, 2012).

For Nursing Practice and Hospital Administration
Strengthen compliance with hospital protocols by incorporating audits, feedback, and accountability mechanisms (Christofidis et al., 2016). Address workload pressures by reviewing staffing ratios and leveraging supportive systems such as automated telemetry alerts to assist nurses in early detection (Funk et al., 2010). Create structured reporting frameworks to streamline communication and ensure immediate escalation of critical telemetry findings (Benner et al., 2010).

For Policy and Leadership

Develop competency validation programs as part of yearly professional assessments to align perceived confidence with actual skills (Nishimura et al., 2018). Establish a culture of lifelong learning by integrating telemetry interpretation workshops into mandatory professional development (Murray et al., 2017). Provide recognition and incentives for nursing units that demonstrate excellence in monitoring, interpretation, and timely reporting to reinforce positive practices (Aiken et al., 2014).

Conflicts of Interest

The authors certify that no significant competing personal, professional, or financial interests could have affected the execution or presentation of the work contained in this manuscript.

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