

Review Article

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Vital signs role and significance in detecting early cardiac events

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ABSTRACT

Cardiovascular diseases continue to be a contributor to mortality highlighting the significance of intervention. Nurses are often the first healthcare professionals to assess patients and their ability to identify symptoms and deviations in signs is essential for early detection of cardiac distress. Many individuals encounter symptoms such as discomfort in the chest, trouble with breathing, irregularities, heartbeat and increased fatigue. These symptoms can be signs of events. Nurses' attentiveness in monitoring these symptoms and vital signs enables response and lifesaving interventions. Furthermore, advancements in healthcare technology like automated monitoring systems and telehealth platforms enhance nurse's ability to detect events by allowing real time data collection and remote monitoring. This review explores the role that nurses play in detecting events early on with a specific focus, on monitoring vital signs like blood pressure and heart rate. The comprehensive management of events encompasses accurate diagnosis, evidence-based treatment, patient education and modification of risk factors. The expertise and constant vigilance of nurses significantly contribute to improving care and enhancing patient outcomes. As healthcare technology continues to advance nurses' role in detecting events becomes even more crucial solidifying their indispensable position, in promoting heart health.

Keywords: Cardiac events, Vital signs monitoring, Cardiovascular diseases, Clinical manifestations, Healthcare technology

INTRODUCTION

Cardiovascular diseases (CVDs) are a cause of death worldwide. It is vital to detect cardiac events early, for timely intervention and improved patient outcomes. Within the healthcare field nurses play a role in monitoring patients' vital signs, such as blood pressure, heart rate, respiratory rate and temperature.¹ This review specifically

focuses on the perspective of nursing. Emphasizes the importance of signs in detecting early cardiac events. Vital signs are elements of nursing assessments, providing information about a patient's physiological condition. Among these indicators blood pressure and heart rate hold relevance in identifying cardiac issues. Blood pressure measurements involve diastolic values which indicate the force exerted by blood against walls during each heartbeat. Elevated blood pressure poses a risk for CVDs. May

suggest heart problems. Heart rate or pulse rate denotes the number of heart beats per minute.² Can vary depending on factors like age, activity level and overall health status. Monitoring changes in heart rate is crucial as sudden alterations can indicate distress, within the system.^{3,4} Nurses regularly assess heart rates to identify rhythms that may be indicative of arrhythmias or other cardiac conditions. Monitoring blood pressure is an aspect of nursing care as changes, from a patient's readings can offer valuable insights into their heart health.⁵ When blood pressure rises above levels, which is called hypertension it significantly increases the risk of diseases (CVDs). Nurses have a role, in identifying hypertension by checking patient's blood pressure during their hospital stays or clinical visits.⁶ When blood pressure readings are high it may lead to evaluations like electrocardiography (ECG) or cardiac enzyme tests. On the other hand, low blood pressure, known as hypotension can also be worrisome as it might indicate reduced heart output or an impending shock.^{7,8} To address hypotension nurses may take actions like administering fluids, medications or referring patients to cardiology specialists for examination. Alongside monitoring the heart rate nurses also assess heart rate variability (HRV) and rhythm. HRV refers to the variation in time between heartbeats. Provides insights into how the autonomic nervous system affects the heart.⁹ A decrease in HRV has been associated with increased risks. Nurses can assess HRV using monitoring equipment or ECGs. Assessing rhythm is vital for identifying heartbeats or arrhythmias such, as fibrillation (AFib) ventricular tachycardia or bradycardia. Recognizing arrhythmias promptly is crucial since they can elevate the risk of events and sudden cardiac arrest. Patients with symptoms related to their heart often undergo signs assessments. Chest pain or discomfort is an experienced symptom of events and when assessing patients, nurses take into account factors such, as blood pressure, heart rate and respiratory rate. Chest pain may be accompanied by blood pressure increased heart rate (tachycardia) and rapid breathing indicating the need, for attention and further diagnostic tests like ECG or cardiac enzyme analysis.¹⁰ Nurses are often the first healthcare professionals to interact with patients and their role in detection of events is crucial. By monitoring signs nurses can spot subtle changes in a patient's condition and take appropriate actions. For instance, a nurse looking after a patient in a telemetry unit might notice a rise in heart rate or irregular heartbeat on the monitor.^{11,12} Swiftly informing the healthcare team can lead to prompt intervention and life saving measures. In outpatient settings such as clinics or primary care offices nurses regularly measure blood pressure to assess heart rate. Elevated blood pressure or signs of heartbeat may prompt referrals to cardiologists for further evaluation and management. Healthcare technology advances have improved nurses' ability to monitor and detect events. Automated blood pressure cuffs and ECG monitoring systems provide real time data that allows nurses to track changes continuously. Telehealth platforms enable monitoring of signs, which is particularly beneficial for patients with chronic cardiovascular conditions.^{13,14}

Therefore, nurses play a role in the detection of cardiac events, through vigilant monitoring of vital signs. Monitoring blood pressure heart rate, heart rate variability and assessing the rhythm are aspects of nursing evaluations. The ability of nurses to identify any changes, from values and detect abnormalities in signs is crucial for promptly intervening and enhancing patient outcomes in the field of cardiac care. By remaining vigilant and utilizing technology effectively nurses play a role, in detection of cardiac events, which ultimately leads to saving lives and improving overall heart health. This research examines the role that vital signs play in detecting cardiac events.

METHODS

This study, which was conducted on 21 November 2023 examines a range of literature, from Scopus, PubMed and ScienceDirect. It utilizes terminology and various keywords such as " signs," "cardiac events," "early detection " and "nursing perspective." The main objective is to focus on research that prioritizes human centric approaches published in English since 2008. By investigating the role of signs this review aims to enhance our understanding of their importance in the detection and management of cardiac events, through a nursing lens.

DISCUSSION

The conversation brings attention to the role that nurses play in detecting events early by monitoring vital signs. Cardiovascular diseases (CVDs) are a global health concern. It's important to intervene for better patient outcomes.¹⁵ Nurses often have the interaction, with patients and their expertise in assessing signs like blood pressure and heart rate is key to identifying early signs of cardiac distress. This review emphasizes the importance of recognizing symptoms such as chest pain, shortness of breath, palpitations and others as indicators of cardiac events. By monitoring these symptoms and vital signs nurses can respond quickly potentially save lives. Moreover, the discussion highlights how technology enhances nurse's ability to detect events. Automated monitoring systems and telehealth platforms have transformed care by allowing real time data collection and remote monitoring of signs.¹⁶ These advancements enable evaluation and early intervention particularly benefiting patients, with cardiac conditions.

Clinical manifestation

CVDs continue to be a cause of death underscoring the importance of detection and intervention, in cardiac events. Nurses play a role in the healthcare system as they are often responsible for assessing patients. It is vital for nurses to recognize the signs of events and rely on vital signs like blood pressure, heart rate, respiratory rate and temperature to gather valuable insights for early detection.^{17,18} Chest pain or discomfort is an indication associated with cardiac events. Patients frequently describe this sensation as

tightness pressure, a burning feeling or heaviness, in their chest. Nurses need to assess chest pain by determining its location, duration and intensity. Chest pain that radiates towards the arm, neck, jaw or back is particularly concerning. Vital signs like heart rate and blood pressure become tools in evaluating chest pain since an increase in these may indicate distress. Another clinical manifestation that can suggest the onset of events is dyspnea or difficulty breathing. Patients might experience breathlessness during periods of rest or, with physical exertion. Nurses have a responsibility to evaluate the patients breathing rate and diligently observe any alterations. The presence of fast shallow breathing could suggest that someone is having difficulty breathing due to heart related problems. When the respiratory rate increases along with a heart rate it emphasizes the need for monitoring. Patients who are experiencing events often report feeling tired and weak without any obvious explanation. This fatigue can be sudden and severe making it difficult for patients to carry out their activities. Nurses should ask about the patient's energy levels. Inquire about any instances of exhaustion. It's worth noting that fatigue that worsens with activity is a worrying sign. Monitoring signs is crucial in assessing the condition of the patient and an increased heart rate might be present as a response to reduced cardiac output.¹⁹ Palpitations, which are described as irregular or forceful heartbeats can also indicate cardiac events. Some patients may feel like their heart is skipping beats or racing uncontrollably. Nurses should proactively ask patients about feelings of palpitations. Perform an examination of their heart rate and rhythm. Detecting any irregularities in the pulse could indicate arrhythmias, which may be linked to events. It is crucial to monitor the heart rate and rhythm to identify and assess palpitations accurately. Excessive sweating, medically known as diaphoresis can also accompany signs of events. Patients often report sudden. Profuse sweating, mainly concentrated on the forehead and upper body. Nurses should remain vigilant for signs of diaphoresis. Carefully observe the patients skin condition. It's worth noting that increased heart rate and blood pressure can often coincide with diaphoresis highlighting the importance of assessing signs. Nausea and vomiting may occur due to reduced output and inadequate blood flow to organs during early cardiac events. Nurses should inquire extensively about symptoms. Pay close attention to complaints of nausea, vomiting or stomach discomfort. Consistently monitoring blood pressure is essential in evaluating perfusion since low blood pressure can sometimes accompany these symptoms concurrently.²⁰ Syncope or fainting can be a manifestation of cardiac events indicating insufficient blood supply to the brain. Nurses should actively inquire about any episodes of syncope while conducting assessments of signs before during and, after such incidents.²¹ Keeping track of the heart rate and blood pressure while experiencing episodes of syncope can provide information that helps with identifying the cause and guiding treatment. Swelling in the legs, ankles and feet which is known as edema can occur as a result of heart failure or other cardiac problems. It's crucial for nurses to be vigilant, in looking for signs of

edema by inspecting the extremities and noting any swelling or pitting edema. Frequently keeping track of indicators can assist in detecting symptoms of heart failure like a rise in heart rate and blood pressure. When cardiac incidents occur there could be a drop in circulation resulting in alterations to one's condition. Individuals may exhibit signs of perplexity, disorientation or uneasiness. Nurses should carefully assess the patients state while keeping an eye on signs like blood pressure that can indicate cerebral perfusion. The presence of blood pressure especially when combined with mental status is a significant warning sign. Patients experiencing events may also feel anxious and restless due to discomfort and a sense that something bad is about to happen. Nurses should be skilled at recognizing signs of anxiety like restlessness, apprehension and a strong feeling of impending doom. Monitoring signs becomes particularly important in this situation since an increased heart rate and elevated blood pressure could be associated with anxiety. The clinical manifestations of events can vary widely and nurses have a crucial role, in identifying these signs and symptoms. The evaluation of patients and detection of distress heavily rely on signs such as blood pressure, heart rate, respiratory rate and temperature. It is crucial to recognize these indicators as they play a significant role in early intervention and ultimately contribute to better patient outcomes in cardiac care. Nurses expertise in assessing signs and clinical symptoms is essential for saving lives and ensuring cardiac health, for patients.

Management

Managing patients who experience events is a complex process that requires a systematic approach to deliver prompt and effective care. Detecting these events early is critical as it can have an impact on patient outcomes. Healthcare professionals, including nurses play a role in this process. When a patient presents symptom like chest pain, difficulty breathing or irregular heartbeat a thorough assessment is conducted. This assessment involves gathering history conducting physical examinations and utilizing diagnostic tests. The management of events begins with an accurate diagnosis in which healthcare providers, including nurses, are instrumental. When patients exhibit symptoms such as chest pain, shortness of breath or palpitations healthcare professionals conduct assessments that include medical history taking, physical examinations, and diagnostic test utilization.²² An electrocardiogram, which is also referred to as an ECG or EKG is frequently performed to observe the heart's function and detect any irregularities in its rhythm. It helps in detecting conditions such as ischemia (blood flow to the heart muscle) and other abnormalities related to the heart. Obtaining access to ECG results is crucial for diagnosis. Additionally, measuring biomarkers such as troponin levels through blood tests plays a role, in diagnosing these conditions. Higher levels of troponin can suggest that there has been damage to the muscles of the heart. This can help verify if an event has taken place. Nurses and healthcare professionals assess the patients risk

factors, for heart related issues taking into account factors like age, family history, smoking habits, high blood pressure, diabetes and cholesterol levels. It is crucial to have an understanding of these factors that contribute to risks when it comes to making decisions regarding care. The main objectives, in handling situations are to relieve symptoms, avoid any harm, to the heart, and reduce the likelihood of complications. The actual course of treatment might differ depending on the type and severity of the situation. It commonly includes medications, oxygen therapy if needed, antiplatelet therapy, revascularization procedures when necessary, pain management strategies, lifestyle adjustments, and participation in cardiac rehabilitation programs. Proper pain control plays a role in managing cardiac events as it not only enhances patient comfort but also reduces the strain on the heart caused by pain. Educating patients is an aspect of management. Nurses and healthcare providers take responsibility for ensuring that patients fully comprehend their condition, treatment options and how to effectively manage their heart health. Patient education covers topics like adhering to medication schedules and following guidelines for them (engaging in regular physical activity under proper guidance or supervision if needed), recognizing symptoms related to their condition(s), managing stress effectively, quitting smoking (if applicable) and attending follow-up appointments as required. Clinical management also emphasizes addressing and modifying risk factors that contribute to heart-related issues. Nurses and healthcare professionals collaborate with patients to develop strategies for reducing risks such as controlling blood pressure levels within ranges, managing diabetes effectively, keeping cholesterol at healthy levels, maintaining an appropriate weight and providing psychosocial support throughout their journey, toward better heart health. Managing patients who experience events is a complex and collaborative process. It requires diagnosis, and treatment based on evidence, educating the patient, making necessary lifestyle changes to address risk factors, and providing support. Nurses are members of the healthcare team. They have a crucial role, in providing top-notch care while also empowering patients to make informed choices regarding their heart health. By working together, healthcare professionals can improve outcomes and actively participate in the prevention and management of cardiac events.

CONCLUSION

In conclusion, it is crucial to identify events early when dealing with diseases. Nurses, being, at the forefront of healthcare provision play a role in this process. By monitoring signs and recognizing clinical symptoms, nurses greatly contribute to timely intervention and improved patient outcomes. The management of events involves a comprehensive approach that includes accurate diagnosis, evidence-based treatment, educating patients and modifying risk factors. The expertise and constant vigilance of nurses are essential, in enhancing care and ultimately saving lives. With the advancement of

healthcare technology, nurse's ability to detect cardiac events is further enhanced, highlighting their irreplaceable role in promoting cardiac health.

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