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Nurses' Perceptions of the Impact of the Electronic Health Record on Clinical Decision-Making

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Spring 2020

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Abstract

This study explored the impact of electronic health record (EHR) use on registered nurses' critical thinking, decision-making, and quality of care for hospitalized patients. Based on literature review, the researcher maintained a consistent definition of critical thinking and decision-making and how the use of the EHR affects these two complex yet significant processes. A descriptive survey design to assess registered nurses' attitudes and perceptions of how the EHR influences their clinical decision-making when caring for patients in an acute care setting. It found that nurses are aware that the EHR is beneficial, yet they often feel that electronically charting can be time consuming as they have to navigate through several tabs and document in places that are often complex and repetitive, taking time away from being more present at the patient's bedside. Findings in this study support a majority of those found in the literature review. Understanding how nurses are affected from interacting with the EHR as part of their daily routine will offer insights on what improvements can potentially be more efficient as nurses work to bring high quality patient care.

Keywords: electronic health record, registered nurses, perceptions, critical thinking, decision-making, quality of care, healthcare providers, hospitalized patients, patient outcomes, technology

Introduction

In the past few decades, the healthcare field has had an increasingly global technological advancement. One prime example of this is the electronic health record. The electronic health record has become an essential platform that evolved rapidly over a short period of time to serve as a way to use and communicate health information. It is being used all around the world as a way to communicate health information across various health care professionals, track a patient's progress, and trend lab results to ultimately enhance patient outcomes through safety and quality of care (World Health Organization, 2005). Serving as a more secure and faster alternative to the traditional handwritten paper charts, the electronic health record is one of the most important advancements in technology with several positive, and some negative, outcomes. Awareness of these factors helps health professionals better understand and utilize these resources for client care and improving patient outcomes.

Purpose of the Study

The electronic health record (EHR) has proven to be beneficial in communicating interprofessionally and in reducing medical errors. One of the problems with technology, however, is that professionals spend more time dealing with the complexities that come with the use of electronic platforms. A common issue that healthcare professionals encounter in working with machines and technology is the time it takes, time that could have been used giving direct and indirect patient care performed by nursing duties at the bedside (Cheevakasemsook et al., 2006). The World Health Organization recognizes the importance of electronic health records, but that ongoing research still needs to be done in order to ensure that ethical, safe, and high quality standards are met (2005). This phenomenon brings us to explore how exactly electronic

documenting in the EHR affects registered nurses' critical thinking, decision-making, and ultimately the quality of care for hospitalized patients in this technologically advanced age.

Theoretical Framework

There are many factors that encompass navigating through an electronic health record. It is important for the nurse to have knowledge and an understanding of the nursing process as it pertains to their patients who require individualized care. Having a base knowledge as well as critical thinking and decision-making skills from nursing judgement can develop optimal individualized patient treatments. Nursing theorist, Faye Abdellah, developed a human needs theory that identifies nursing as “doing something to or for a patient” in order to help patients reach an optimal level of their health (Petiprin, 2016). The human needs theory from Abdellah’s practice has identified ten steps to identify a patient’s problem and eleven nursing skills used to develop a treatment plan for those problems. The ability to identify patient problems and develop a comprehensive nursing care plan are two of the ten steps of providing effective nursing care to patients.

A study on nursing informatics discusses how the majority of a nurse’s work involves working with technology and information management (Monsen et al., 2019). Nurses spend most of their time on charting patient's situation by clicking the pre-designated choices in the EHR. Each patient is unique, so health condition and patient treatment should also be individualized. Therefore, the EHR’s designed words may not always accurately describe the patient's current condition, and also not provide enough evidence for nurses to develop personalized nursing care plans. Inability to identify patient problem can affect the nursing care delivered to the patient as well as the ability to critically think through problems. This study focuses on Faye Abdellah’s theory as a guidance to conduct further research into ways the EHR impacts patients.

Furthermore, it can bring awareness of how the EHR is not meant to be a substitute for clinical decision-making, but rather as a tool to facilitate and guide that process.

Review of Literature

The EHR was developed to bring advantages to the health care provider, as well as minimize preventable medical errors and make it easier for HCPs to access patient health care information before, during and after patient visits. Development of the EHR started in the middle of the 1960s, which was known as “clinical information system” by Lockheed in 1968 (Atherton, 2011). The federal government in America began to use the EHR in 1970s to enhance the efficiency of the health system. Eventually it brought public attention about medical documenting that former presidents of the United States have mentioned and addressed during their presidency period, such as Barack Obama’s support for a national system of EHR in his American Recovery and Reinvestment Act of 2009 (Atherton, 2011). Now, healthcare teams rely on the EHR to communicate interprofessionally, check pertinent patient labs and diagnostic results, and process orders surrounding the care of the patient. This paper will explore published literature works on advantages and disadvantages to using the EHR as it relates to the nurses’ ability to critical think and make decisions, which ultimately affects the quality of care in hospitalized patients.

How the EHR affects nurses’ critical thinking and decision making

Critical thinking and decision making are important concepts that registered nurses are often faced with every day in a clinical setting caring for hospitalized patients. Often times, these concepts are used interchangeably to describe complex processes that nurses work through in order to effectively and efficiently execute actions in providing care. Although similar, these are two very different methods that nurses use regularly, but are often used together side by side.

Among several major studies that were conducted to settle overlapping definitions of critical thinking, an article that creates a critical thinking model for nursing judgement sets this definition as the foundation of their model: “The critical thinking process is reflective and reasonable thinking about nursing problems without a single solution and is focused on deciding what to believe and do” (Katoka-Yahiro & Saylor, 1994 p. 352). Although dating back to 1994, their critical thinking model, consisting of three levels of critical thinking (Level 1 = Basic, Level 2 = Complex, Level 3 = Commitment), stresses the importance of the rational and analytical processes that encompass critical thinking resulting in nursing judgement. This model that they created calls for further research in studying more ways that can promote, and even possibly improve, critical thinking as it relates to nursing practice.

Coincidentally, decision making relates back to critical thinking because nurses make decisions based on their nursing judgement, which consists of a variety of factors. Based on a review of the literature, a more accurate definition was developed; “Clinical decision making is a continuous, back and forth process that may involve data gathering from multiple sources, including the history and physical; data interpretation with further data gathered as necessary; data evaluation with consideration of the data for relevant and irrelevant information; and the formulation of a decision” (Tiffen et al., 2014). Critical thinking and decision-making, capable of working either separately or simultaneously, are two major processes that nurses begin establishing once they are in nursing school. Skills regarding these processes are further developed as nurses gain more experience and spend more time in clinical settings. The EHR is not a substitute for the skills mentioned above, but rather as a tool that facilitates and informs critical thinking and decision-making.

In one article outlining the advantages and disadvantages to an electronic medical record, Sujansky lists several benefits to having an electronic chart, such as monitoring adverse clinical events that could be overlooked, recommendations such as screening tests, vaccinations, and counseling, and assisting with prescribed medications. A disadvantage that the author notes, however, is that computer-based tools cannot understand clinical information, such as being able to understand “dyspnea” and “SOB” (Sujansky, 1998, p. 180). This implies that nurses must be able to use their nursing judgement to make sound clinical decisions instead of relying on technology to critically think for them and to decide how to best treat patients based on unique situations.

In 2010, Laurie Huryk used a database search that focused on the attitudes and factors influencing nurses’ attitudes towards healthcare information technology (p. 608). She noted significant factors that influence nurses’ attitudes towards the EHR, such as demographic factors including ages, gender, and level-of-education, the nurses’ work environment, and the electronic health record system itself. A drawback on the EHR is that nurses find that the systems can be slow as they go through their system updates. Another drawback is the Decision Support System that’s integrated in the EHR. A Decision Support System is an interactive computerized system program that helps and supports healthcare professionals’ decisions as they provide care to patients (Power, n.d.). Nurses who do not have much nursing and computer experience do not feel comfortable trusting the decision support system and often do not utilize it. Nurses and other healthcare providers who have more experience however, feel more comfortable utilizing these systems to their advantage to further support their decision-making. Overall, she found that nurses reacted positively to the incorporation of the EHR on the unit, as

they found it to be effective in providing safe and efficient care in patients by reducing errors and allowing nurses to have more time to spend at the bedside performing direct care.

The EHR serves as a platform for registered nurses to document evidence of performed care and nursing activities, communicate patient care, assess and record progress, and evaluate the care given and patients' responses. Nurses have become increasingly key decision-makers in the field and decisions that they make based on what they are documenting as evidence is significant in patient outcomes in the hospital. Documentation should be accurate, complete, and thorough in order to be effective at improving patient outcomes, as the EHR is a tool in facilitating and informing nursing judgement based on critical thinking and decision-making.

Factors Affecting Nurses' Critical Thinking And Decision-Making

A study that took place in 2012 in Australia shows how ineffective documentation continues to be cited as a major cause of adverse events for patients from missing and/or delaying important treatments and providing inappropriate care that is either irrelevant or unnecessary to their individualized care (Tower et al., 2012). This study looked at how using the decision-making process affects nurses documenting in the EHR. Although this study was limited to one small hospital outside of the United States, the findings were significant as it pertains directly to how documentation affects the way nurses make decisions. Researchers used purposive sampling to recruit seventeen Australian RNs. Each RN was given a digital recorder and asked to use think-aloud strategies in order to verbalize their thinking as they documented in patients' notes. After gathering and analyzing a total of 153 audio recordings from the RNs, researchers found that the decision-making process was dependent on the situation and having the nurse have an awareness of the different situations that they're presented with. This was an effective way of measuring how nurses made decisions based on the situation they were

presented with when caring for their patients. This study showed how efficient implementing decision-making strategies are as they relate to appropriately documenting in the EHR and carrying out patient care effectively.

Common themes that researchers also found included cues that prompted nurses to begin their decision-making. These cues were activities of daily living, medications, observational assessment, supportive needs, situational awareness, assessment of pain, assessment of mental status, after care, clinical requirements, and completion of paperwork. Being situationally aware and using think aloud methods encouraged the nurse to respond appropriately to patient's conditions and to document accordingly to show proof that they made decisions based on cues that they were presented with in a given situation.

Another study, conducted outside of the United States in 2017, finds that performances documented by nurses in the EHR were below standard. For example, nursing activities often did not indicate that the nursing process, the systematic guide to patient-centered care, was implemented prior to initiating an action (Asmirajanti et al., 2017). This quantitative cross-sectional study in DK Hospital of Semarang, Indonesia that had access to 240 medical records of discharged patients from October to December 2016 showed that nurses were not consistently assessing situations, forming nursing diagnoses and implementations, and evaluating outcomes. This resulted in adverse patient outcomes, such as not being compliant with discharge instructions and an increased rate of readmission, due to the ineffective use of the nursing process. Without critical thinking and decision-making, nurses are not able to utilize the nursing process in caring for their patients, as evidenced by their below standard performances. Documentation should be consistently and regularly controlled, as it is supposed to encourage

and guide nurses to perform effective, thorough and high quality care in the patients through their critically thinking skills and nursing judgement.

Some complexities that occur with electric documentation are that it can be inaccurate, incomplete, and/or inconsistent. This ultimately results in performing inappropriate nursing interventions that are not relevant to the patient's condition. Other related factors are that the EHR systems are either too long and difficult to navigate through, and/or repetitious and time-consuming for the nurse to complete in addition to the other tasks they must do during their shift. These are factors that do not encourage the nurse to critically think and make decisions based on the information they've gathered from using the nursing process. They feel pressured to complete their documenting, which often results in incomplete or inaccurate charting where they are not efficiently communicating the continuity of care to other healthcare professionals who have access to the EHR. Disruption of electronic documentation (inconsistent use of the nursing process), inappropriateness and incompleteness in charting (insufficient information about the condition and nursing care provided), limited nurses' competence, decreased motivation and confidence to document accurately, ineffective nursing procedures (where nurses are not managing time accordingly and don't have enough time in a shift to document in the EHR), and inadequate nursing audit, supervision, and staff development (where staff don't address issues or support accurate documentation in the EHR) were the main findings that resulted from this study (Cheevakasemsook et al., 2006). The study used multiple methods of inquiry that includes in-depth interviewing, patient observation, group processing, focus group meetings, time and motion study of nursing activities and the auditing of completeness of nursing documentation in a private hospital in Bangkok, Thailand that observed performances over a three-day period. These multiple methods provided the researchers to explore the factors through both quantitative

and quantitative studies. These factors suggest that electronic documentation in the EHR has issues that need to be resolved first in order to promote the nursing process and critical thinking that accompanies the decision-making process to provide individualized patient care.

Nursing documentation is a major important function in the healthcare field that serves as a way to ensure effective communication between healthcare professionals, continuity of care, a legal platform that shows proof of having done a nursing task involving direct/indirect care with patients, and assesses and evaluates the progress of patients. In order to have better patient outcomes, strategies must be implemented in order to resolve issues targeting the factors that deter efficiency and effectiveness of electronic documentation, a significant tool used to facilitate and guide critical thinking, decision-making, and nursing judgement through the model of the nursing process.

How the EHR benefits health care teams

Although there have been conflicting studies showing both positive and negative ideas, the EHR was developed to enhance the efficiency of the healthcare team while providing care for patients. The article discussed earlier in the paper looking at the benefits and challenges of the EHR has summarized different classes of the computer tool, such as clinical event monitors, preventive care recommendations, diagnostic decision support programs, drug-prescription assistance, and automated practice guidelines. The systems analyze and generate information, which are supported by care guidelines published by authoritative sources to make sure it is accurately “calculate” to ensure that the EHR meets electronic standards. Several systems can help HCP decrease the chance of making mistakes by detecting drug allergies, diseases, and drug to drug interaction. It is thought that the EHR decreases the workload on nurses, so they can focus on providing individualized care for patients (Luo, 2019). Using the EHR can better

support hospitals and researchers because it serves as a research tool to gather, monitor, and analyze data (Sujansky, 1998).

A systematic review that explores the literature in Medline, the Cochrane Central Register of Controlled Trials, the Cochrane Database of Abstracts of Reviews of Effects and the Periodical Abstracts Database looks for relevant and applicable studies that pertain to the evidence on the effect of the health information technology on quality, efficiency and cost of healthcare. They found that the greatest benefit in developing the EHR results from improving the quality of care in patients, such as providing guidance and direction of patient care. Computerized systems provide ways to keep track of patient situations by reminding healthcare teams to deliver care at certain times of the day, or even provide bundled care to promote rest in a patient, in order to enhance patient outcomes. Developing and promoting the usage of EHRs has been shown to decrease the length of stay to 0.9 days and it provides a significant decrease in the cost of each admission by 12.7% (from \$6964 to \$6077) because of the accurate information that the EHR provides to inform and guide the HCP in planning their patients' care (Chaudhry et al., 2006). In other words, the use of an EHR benefits hospitals and patients. Shorter lengths of stay due to efficient care provided by nurses, which is supported by the EHR, allows patients who need higher acuity care to be admitted.

How The EHR Affects Patients And Hospital

Without a doubt, the EHR has become one of the most widely used systems in healthcare. It provides easy access and feasibility for nurses to input their data entries on patients and it provides the medical team a report on patients' health status and care. A work-sampling study conducted over two weeks by a medical student in a hospital in Los Angeles looked at the time it took to chart in the electronic health record versus the paper chart. On a labor and delivery unit

with twenty rooms, the medical student, also known as the observer, spent four hours observing nurses carry out activities such as documenting, performing bedside and nonbedside care, and nonpatient care such as taking meal breaks. The observer found that the nurse spends significantly less time charting on the electronic health record than on the paper chart, and because of this, nurses are able to spend more time performing bedside patient care (Korst et al., 2003).

While this system can provide better information for the medical teams, inaccurate usage of the EHR by the nurses might cause many problems. The EHR negatively affects nurses who aren't critical thinking by using the nursing process as they document, and it also negatively affects both the hospital and the patient. While the commitment of nurses should primarily be focused on patients, the EHR can interfere with their ability to provide high quality care by pressuring nurses to complete their electronic documentation by a certain time (Luo, 2019). The usage of these electronic devices can also affect the hospital, such as the length of stay for patients.

An example of how the EHR negatively affects outcomes includes research that shows that the use of EHR system increases the length of stay in the hospital for patients. A study that supports this claim has examined the efficiency of the EHR in the emergency department (ED) in Brigham and Women's Hospital in Boston, Massachusetts. Researchers analyzed data during a one-year period before and after the eDoc was implemented. There was a significant increase of 6.3 minutes for overall length of stay and 5.1 minutes for length of stay for discharged patients due to date entering in the eDoc system (Febowitz et al., 2017). When the patient stays longer than usual in ED, this would not only delay the patients' treatment, but it also impacts how nurses care for other patients as well. Strategies to improve this issue is to reduce documentation

requirements and add more staff to lessen the work load on the working nurses (Febowitz et al., 2017).

Another concern is that nurses should spend more time with their patients to provide high quality care rather than spending a lot of their time charting in the EHR. A time and motion study looked at 767 nurses from 36 medical-surgical units in order to identify what factors influences the inefficiency in the way that nurses work. The data consists of three subcategories that nurse's spend most time of their practice. These subcategories are "documentation (35.3%; 147.5 minutes), medication administration (17.2%; 72 minutes), and care coordination (20.6%; 86 minutes)" (Hendrich et al., 2008). At this point, documentation seems to be one of the most important responsibilities of a nurse, which takes up a large portion of their work time. If nurses try to manage their time between their official tasks and caring for patients, patients potentially get to stay for a shorter period of time. Thus, nurses can provide better care for their patients that result in better outcomes by concentrating more on providing the forms of treatment rather than patient's information entry.

Furthermore, the EHR can affect the hospital in many ways. The systematic review discussed earlier in this paper on the effect of the health information technology on quality, efficiency and cost of healthcare notes that if nurses try to spend more time on the EHR, this increases hospitals' ongoing cost for caring for patients, which affects the quality service that the hospital can provide. The maintenance cost of the EHR was \$700,000 to build, update and evaluate yearly between 1995 to 2004 across the world. However, there are many nurses who do not know how to accurately document in the EHR. This leads to a decreased efficiency of the EHR as a result of improper documentation. Proper training and on-going support for nurses documenting is important in order to ensure that patient care and time is efficient (Luo, 2019).

The study has stated that human factors have a big influence on the quality of health information technology, since staff are not all well trained on how to use it (Chaudhry et al., 2006).

Researchers have shown that the EHR has an effect on nurses' critical thinking and decision making since they are used to clicking the box of pre-designated words to refer to a patient situation rather than writing their own nursing care plan and providing an extensive narrative in the progress notes (Tower et al., 2012). As discussed earlier in the paper, critical thinking and decision-making are two separate significant processes that are often overlapping concepts that is required in order for a registered nurse to make sound clinical judgement.

According to nurse theorist, Abdellah, it is found that these two processes are needed in order to ensure individualized care is provided to patients because each patient is different and unique and require care plans to be personalized (Petiprin, 2016).

Although the EHR is time consuming, many nurses still do not document effectively and thoroughly. They also do not feel competent enough to properly do so. Hospitals spend large amounts of money on yearly maintenance and development, but do not invest much on preparing their staff to be trained on how to use relevant EHR systems. The cost and effect of the EHR has been brought to our attention whether or not it is worthwhile to invest large amounts of money and time to it. From the studies, it has shown that using the EHR increases the length of stay in the ER, but other studies have stated that using the EHR decreases the length of stay and cost for inpatient unit (Chaudhry et al., 2006). There must be more research that has to be done to evaluate how the usage of EHR affects the length of the stay in hospital.

However, we need to understand that the EHR is a new documentation method that the healthcare field implemented recently just within a few decades, so nurses are constantly adapting to this fairly new and advancing system. The EHR needs to be created and changed to a

friendly user setting as programs develop different documentation systems for each unit, since each floor has their own specialty and their own focus assessment on patients, which is essential to utilize it as a way to guide the nursing process through critical thinking and decision-making to form nursing judgements (Huryk, 2010).

Along with staff and health care professionals, patients should have access to their own record in the EHR so they can continue to check and monitor their own health progress. The study looking at what patients think about accessing the EHR has shown positive results for implementing patient usage of the system because patients can track their lab results and the notes from doctor's visits. Patient usage of the EHR also requires proper training. Without adequate training or knowledge about how to navigate the system, patients most likely would not be able to understand their medical record, which would result in unnecessary anxiety and confusion (Wass, et al., 2019).

Nurses are the healthcare professionals that know their patients best. They spend so much time and energy constantly assessing, planning, and evaluating whether or not their patients are improving. Research focusing on how nurses interact and utilize these systems, what notes and/or points they chart, and when they are able to chart is significant in order to make appropriate adjustments and improvements on how to best utilize these resources. This review suggests that assessing how the EHR is able to help guide nurses' critical thinking and decision-making through the nursing process, researchers can then find ways to implement strategies that can further impact the hospital, staff, and patients in more positive ways than there are negative (Luo, 2019).

Research Study

Research Question

According to the World Health Organization, the electronic health record (EHR) has become an essential platform that evolved rapidly and is used all around the world to communicate health information across various health professionals in order to ultimately enhance patient outcomes through safety and quality of care (2005). Despite this, much research still needs to be done on its evolution and impact on the professionals, especially nurses, who are one of the largest groups of users for EHRs (Strudwick & Hall, 2015). The objective of this study aimed to understand registered nurses' attitudes and perceptions on how the use of the electronic health record influences clinical decision-making in an acute care setting. The goal was to determine how efficient the EHR is when utilizing the nursing process, a rational and systemic guide that nurses use routinely to stay organized, and guiding clinical decision-making in nurses.

Participants

The target population of this study included registered nurses working in acute care settings. Participants had to have an active RN license, at least 3 months of experience using the EHR in a hospital, are in direct contact with patients, read and write in English, and use the EHR as a daily part of their work routine in order to participate in the study. Eligible participants were recruited by posting the direct link to the survey through social media platforms (i.e. Facebook, Instagram) sent by the researcher, as well as having research advisor, Dr. Kathleen Beebe, disseminate the online survey link to clinical nursing faculty colleagues and Dominican alumni who meet eligibility requirements via email distribution.

Methods

The researcher created a survey through Google forms, a web-based app used to create forms for data collection purposes. The survey included the letter of introduction to the participants in a confidential survey research, a general description of the purpose of the research, inclusion criteria, voluntary implied consent once completing and submitting survey, and the survey. Data was collected without any identifiers (i.e. usernames and/or email addresses) survey answers was not linked to names. Data remained strictly confidential and was compiled and stored on a password protected google spreadsheet on a password protected computer that was only accessed by the researcher and her advisor. Participants were encouraged to take this survey when they feel comfortable during their time off in order to minimize fatigue effects, and the survey took about 10-15 minutes to complete. This study was approved by the Institutional Review Board for the Protection of Human Participants (IRBPHP application #10883).

Instrument

The Google Forms survey asked about demographic factors including the age of the participant, type of work unit, work shift, number of years as a Registered Nurse, type of EHR system, and number of years of experience using the HER. The study survey asked participants to rate their attitudes towards using the EHR by choosing either very positive, positive, neutral, negative, or very negative. The researcher created a total of nine statements using the Likert-scale of strongly agree, agree, neutral/neither agree or disagree, disagree, or strongly disagree. These statements aimed to elicit a response from participants in order to assess how efficient the EHR is when guiding and supporting the use of the nursing process and clinical decision-making. These questions and statements were created with guidance from what was seen in the literature review and was validated by Dr. Kathleen Beebe. This survey was opened from March

4, 2020 – March 31, 2020. The following findings are comprised of a total of 19 responses from registered nurse participants.

Findings

The researcher used a snowball sampling method in order to recruit registered nurse participants on social media platforms, as well as having her advisor help with disseminating the survey link to clinical nursing faculty colleagues and Dominican alumni who meet eligibility requirements. This could explain a fairly young age range from 23-32 years old, with a mean age of 26. These participants worked a variety of units, such as ambulatory surgery, cardiac step-down, progressive care, emergency, intensive care, medical surgical, neonatal intensive care, operating room, and pediatric rehabilitation, with a handful of nurses (5 RNs), working on the medical surgical unit. Majority of participants worked 12 hour shifts, with 7 RNs working 12-hour day shifts and 7 RNs working 12-hour night shifts. More than half of the participants (72.2%) have been working as an RN for 1-3 years, and more than half of the participants (55.6%) have had more than 1 year of experience with using the EHR. EPIC and Cerner were the two popular EHR systems that participants indicated they used at their hospital, 44.4% and 33.3% respectively, while only 5.6% of participants indicated they used systems such as Amkai, CPRS, Cyramed, and Meditech. When asked about what their overall attitude towards using the EHR was, 7 RNs (38.9%) answered positive, and 6 RNs (33.3%) answered neutral.

Nurses' attitudes and perceptions

Figure 2 displays the responses of participants indicating the degree to which they agreed to the definition of clinical decision-making in statement 1. The purpose of this article was to begin to develop a definition and framework of clinical decision-making in order to have a clear understanding and consistent use of the definition (Tiffen et al., 2014). It was important to assess

how participants felt about how efficient the EHR is based on a forming definition of the complex that was being observed. 7 participants (36.8%) agreed, 4 (21.1%) felt neutral, and 5 (26.3%) disagreed. This definition is fairly split between participants agreeing and disagreeing, potentially indicating that it is not conclusive enough to say that the EHR guides and supports nurses' clinical decision-making.

Figure 3 indicates the amount of nurses who felt that they agree with statement 2 stating that the EHR influences how they provide care for their patients. This was an expected finding as nurses use the EHR as a daily part of their routine.

Figure 4 refers to statement 3 with how more than half of the participants, 4 RNs (21.1%) strongly agree and 9 RNs (47.4%) agree, felt that the EHR provides them with the complete and accurate patient medical record that they need to provide high quality care to their patients. From this finding, it is safe to assume that nurses are able to trust that the EHR can provide them with accurate information about their patients.

Figure 5 shows fairly split responses to statement 4 about whether or not the EHR can help nurses create personalized care plans for their different patients. 7 participants (36.8%) agreed, 5 (26.3%) felt neutral, and 4 (21.1%) disagreed. This was an interesting finding as it is typical for the EHR to have a plethora of options for templates to choose from as nurses plan their care based on what condition their patient has.

Figure 6 shows expected findings of more than half of the participants strongly agreeing with statement 5. With advancement in technology and frequent system updates, it would be an expected finding for nurses to be able to spend longer amounts of time navigating through an intricate system that makes up the EHR that they use.

Figure 7 shows interesting findings relating to statement 6 about the EHR being able to accurately detect and alert nurses of any significant changes in their patients’ condition that they are not able to catch right away. While 6 participants (31.6%) agreed, 7 participants (36.8%) indicated that they disagreed with this statement.

Similar to previous findings to statements mentioned above, figure 8 shows fairly split findings between statement 7 about whether or not nurses feel that the EHR supports the use of their nursing process as they utilize it when planning care for their patients. 6 participants (31.6%) agreed, 6 (31.6%) felt neutral, and 5 (26.3%) disagreed. Based on these responses, it is not clear to infer that the EHR is an efficient platform that understands the importance of the nursing process and what that type of rational and organizational system entails.

For findings found in figure 9 about statement 8, a majority of participants, 5 (26.3%) strongly agree and 7 (36.8%) agree, felt that their nursing actions are influenced by the information in the EHR.

Figure 10 shows the final 9th statement created by the researcher about the EHR being able to accurately anticipate the next steps in a patient’s plan of care. More than half of the participants, 10 (52.6%), disagree that the EHR is as efficient to be able to anticipate what to do next.

Demographics

Table 1: Demographics

| | |
|-----|---|
| Age | 23: 1 (5.6%) 24: 4 (22.2%) 25: 3 (16.7%) 26: 1 (5.6%) 27: 3 (16.7%) |
|-----|---|

| | |
|---|--|
| | <p>28: 3 (16.7%)</p> <p>31: 2 (11.1%)</p> <p>32: 1 (5.6%)</p> |
| What is the type of unit you work on? | <p>Ambulatory Surgery: 1 (5.6%)</p> <p>Cardiac Step-Down/Progressive Care Unit: 3 (16.7%)</p> <p>Emergency: 2 (11.1%)</p> <p>ICU: 2 (11.1%)</p> <p>Medical Surgical: 5 (27.8%)</p> <p>NICU: 1 (5.6%)</p> <p>Neuro/Trauma ICU: 1 (5.6%)</p> <p>OR: 1 (5.6%)</p> <p>Pediatric Rehabilitation: 1 (5.6%)</p> |
| What shift do you typically work? | <p>8-hour Day Shift: 3 (16.7%)</p> <p>8-hour Night Shift: 1 (5.6%)</p> <p>12-hour Day Shift: 7 (38.9%)</p> <p>12-hour Night Shift: 7 (38.9%)</p> |
| How many number of days do you typically work? | <p>1-3 days/week: 11 (61.1%)</p> <p>4-6 day/week: 7 (38.9%)</p> |
| How many years have you been working as an RN in an acute care setting? | <p><1 year: 1 (5.6%)</p> <p>1-3 years: 13 (72.2%)</p> <p>7-10 years: 4 (22.2%)</p> |
| How would you describe your attitude towards using the EHR system? | <p>Very positive: 3 (16.7%)</p> <p>Positive: 7 (38.9%)</p> <p>Neutral: 6 (33.3%)</p> <p>Negative: 2 (11.1%)</p> <p>Very Negative: 0</p> |

What EHR system do you use at your hospital?

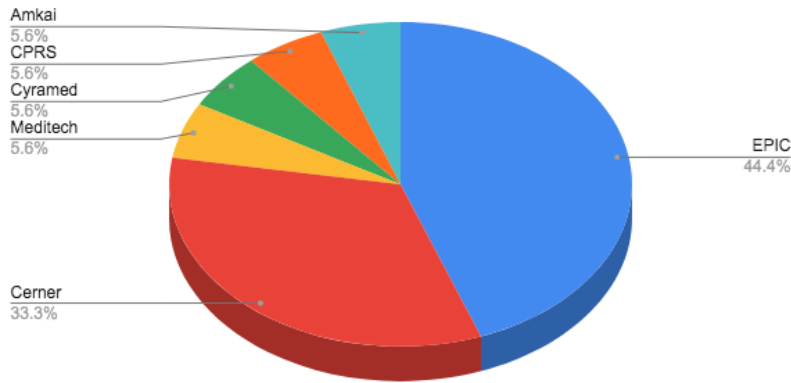


Figure 1.

Nurses’ attitudes and perceptions

The following results are from the Likert-scale formatted statements where participants had the option to indicate the degree of which they agreed or disagreed with each of the following.

Statement 1: In 2014, Tiffen, Corbridge, and Slimmer wrote an article to develop a definition of clinical decision making and defined it as “a contextual, continuous, and evolving process, where data are gathered, interpreted, and evaluated in order to select an evidence-based choice of action.” Based on this definition, do you feel that the EHR is useful in supporting your clinical decision-making?

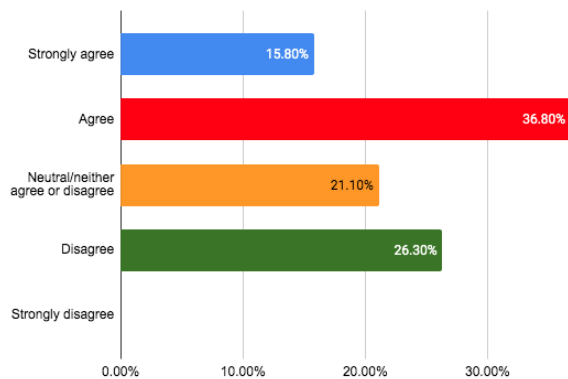


Figure 2.

Statement 2: The EHR influences how I provide care for my patients.

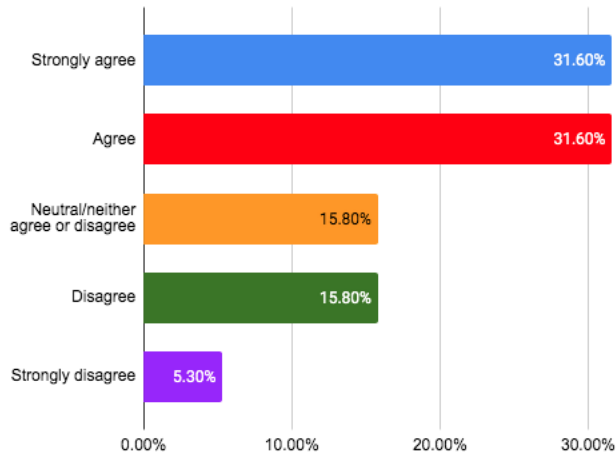


Figure 3.

Statement 3: The EHR provides me with the complete and accurate patient medical record that I need to provide high quality care.

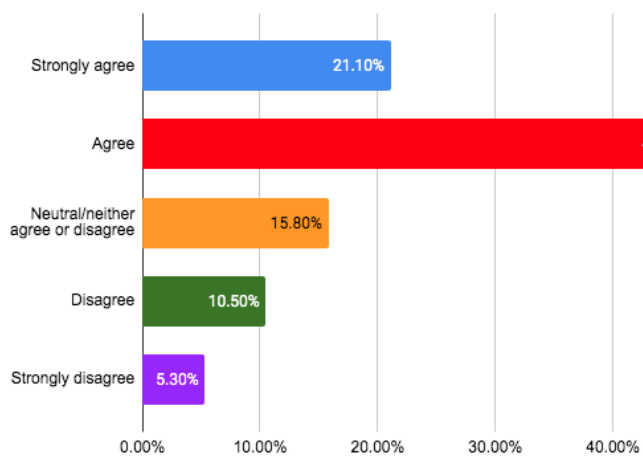


Figure 4.

Statement 4: The EHR helps me create personalized care plans for different patients that I care for.

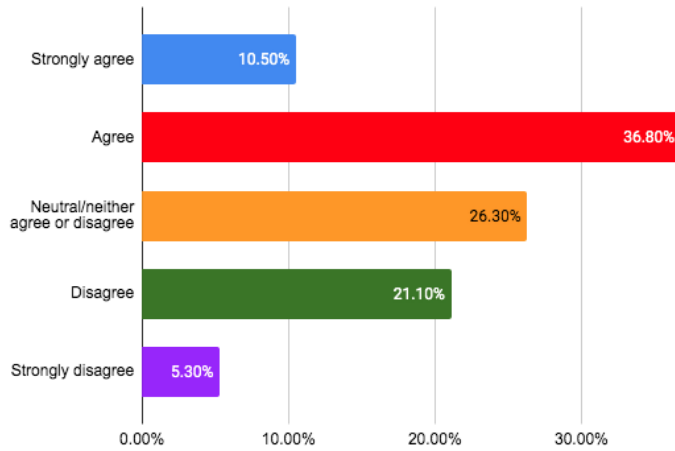


Figure 5.

Statement 5: I spend more time on the EHR than paper-based charting (i.e. navigating from one tab to another, documenting in the notes, looking up patient information).

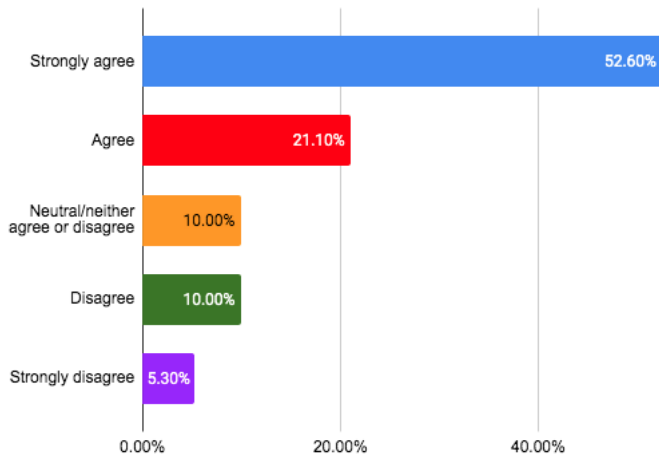


Figure 6.

Statement 6: The EHR is able to accurately detect and alert me to any significant changes in my patients' health condition that I am not able to catch right away (i.e. too low/too high urine output, vital signs not within normal range).

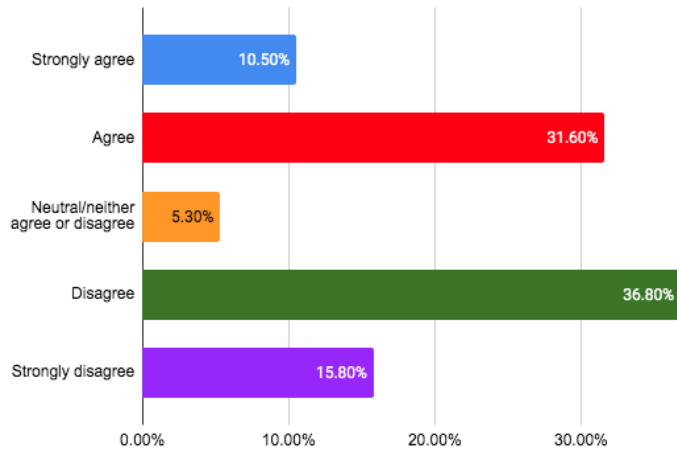


Figure 7.

Statement 7: The EHR supports the use of the nursing process (i.e. by ensuring that I am constantly and thoroughly assessing, diagnosing, planning, implementing, and evaluating).

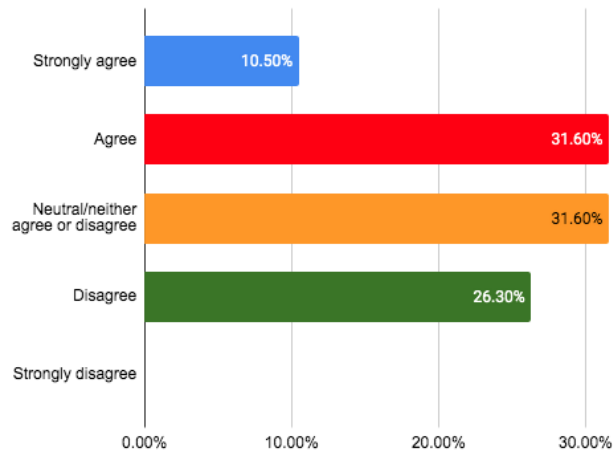


Figure 8.

Statement 8: I feel that my nursing actions are influenced by the information in the EHR.

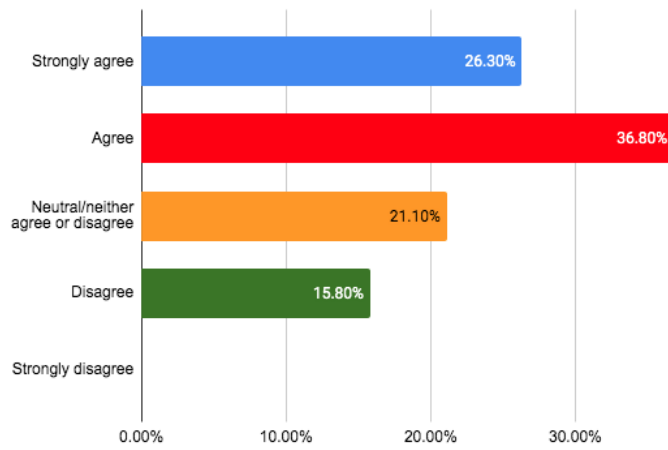


Figure 9.

Statement 9: The EHR can accurately anticipate the next steps in a patient’s plan of care.

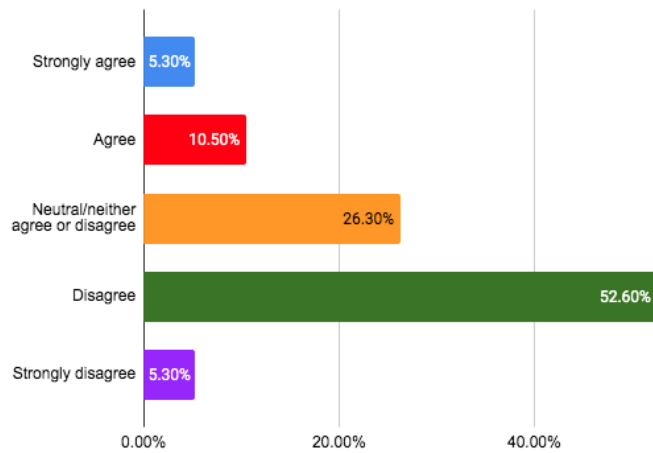


Figure 10.

Optional free response

At the end of the survey, participants had the option to share with the researcher their attitudes, experiences, and/or insights on EHR use. This table shows the free response answers from the participants.

Table 2: Optional free response

It's vital to the team's communication and being able to quickly lookup patient information that will help patient care (trending lab values, looking up dates of past procedures, how long someone has been on a medication, etc.), but sometimes they require us to chart in real time, specifically in the ICU, where sometimes it gets so busy that you don't get to sit down to chart until the end of the shift. Although people argue that charting can take away from patient care, in my 8 years of nursing, I've never seen a nurse decide to chart over taking care of a patient - patients always come first. In those times, it makes work extra stressful and your days/nights extra long when charting.

Some EHRs are more user friendly than other but otherwise is more time friendly compared to paper charting, giving us more time for hands on care towards my patients.

Documentation/charting in the EHR take precedent over actual physical patient care sometimes because nurses are told "if you didn't chart it, it didn't happen."

EHR systems are great in terms of having everything accessible. However, what I find to be an issue is that hospital management keeps coming up with more and more things we "need to chart" in "certain places" on the EHR. This gets frustrating and takes away time from patient care because nurses get so worried that they are charting correctly. When corporate or JCAHO audit, then only look that something is in one little spot, doesn't matter if you made a narrative note (on the EHR) or May have charted it elsewhere, they do not take the information into consideration, potentially putting you (the RN) or the unit at risk for further audits.

Overall, I like having EHR, I've only had a little bit of experience with proper paper charting (when the computers are down). The EHR definitely helps with preventing medication errors, but it's still important to always look at your patient and not solely rely on the EHR. In terms of delivering patient care, it will not sway me from giving patients the highest quality critical care that I can give them, it more do affects what time I get to go home. Haha

EHR does not necessary promote better patient assessments. I've seen it often hinders it, especially for nursing students. They forget to Look at The Patient. Our human senses and gut instincts are often better indicators of assessing. EHR is helpful mostly for medication management, monitoring lab values and assessments of the interdisciplinary team who are working with the patient but we don't get a chance to touch base with face to face. EHR will always be flawed, so we must maintain a balance of using our human senses.

its an effective organization tool for nursing care but also has negative impacts where charting things that are repetitive to "complete" documentation from the EHR can take away from more bedside care of the patient.

Discussion

Based on the findings, nurses rely and trust the information in the EHR in order to provide care for their patients with more than half of the participants, 4 RNs (21.1%) strongly agreeing and 9 RNs (47.4%) agreeing (Figure 4.) Although the EHR is a great tool that has all the accessible patient information that nurses need, nurses feel that they cannot rely on the pre-designated templates for care

plans that the EHR provides. This implies that the EHR is not supporting the nursing process because it does not provide nurses a template for them to care for their individualized patient conditions and needs (Figure 5).

Some other drawbacks of the EHR found in this study included how nurses felt that they spend more time on the EHR than they have with the original paper-based charting, indicating how the EHR is hindering them from being as efficient and productive with their time (Figure 6). Another interesting finding was that 36.8% of nurses did not feel that the EHR is able to accurately detect and alert them of any significant changes in their patients' condition that they are not able to catch right away, potentially implying that the EHR system is not as efficient when supporting nurses about any pertinent changes in their patients' health.

For findings found in figure 9 about statement 8, a majority of participants, 5 (26.3%) strongly agree and 7 (36.8%) agree, felt that their nursing actions are influenced by the information in the EHR. This can either be a positive finding as nurses feel comfortable to feel that they can rely on the EHR when it comes to planning how they execute their plan of care, or a negative one when they might feel that they actions solely revolve around orders seen in the EHR and not on human instinct. As this is not clear as to how positive or negative this influences nurses' actions, it does suggest an interesting finding that the EHR is a platform that nurses often rely on when carrying out patient care.

An important finding was noted in the final 9th statement that shows how more than half of the participants disagree that the EHR is an efficient tool to be able to anticipate what action to do next in a patient's plan of care, implying that the electronic platform does not actually support the nursing process, thus not being able to facilitate and guide clinical decision-making (Figure 10).

Interesting responses were also noted in the optional free response at the end of the survey. For the most part, participants indicated that there were benefits to having the EHR system as part of their daily work routine. It is helpful to have information that is easily accessible where they can be able look up items quickly, such as “trending lab values, looking up dates of past procedures, how long someone has been on a medication, etc.” (Table 2). Some impacts of the EHR that these participants often found frustrating was that charting can be repetitive, indicating that there are multiple pre-designated boxes that a user must click through, which might not be an accurate representation of the patient’s condition because all patients present differently. A participant noted that “the EHR can take away from more bedside care of the patient” because charting often takes more time due to how repetitive clicking through the chart can be (Table 2). Similar to this, participants find it frustrating where it has become an issue “that hospital management keeps coming up with more and more things we “need to chart” in “certain places” on the EHR” (Table 2). Rather than focusing more on providing care for their patients, nurses are getting more concerned with charting appropriately in the EHR, and if not done so, are often “at risk for further audits” (Table 2). As the system is advanced, it seems that these participants feel strongly that even though there are benefits to the EHR, it is concerning as this type of system seems more complex, as there are more places for the nurse to be able to navigate through and to chart in, potentially taking away time that could have been used more efficiently with caring for their patients, thus hindering the nursing process which includes the clinical decision-making aspect of it.

It is evident to see that the EHR is a helpful tool in providing nurses with accurate and pertinent health information that they need to care for their patients, but findings show that this tool requires some improvements that can better assist nurses with being more efficient with their

time by ensuring that they receive the proper training to navigate through the several different tabs. Being more efficient with their time, nurses will be able to focus more on utilizing their nursing process and caring for their patients rather than worrying about charting in an inappropriate place on the EHR.

Limitations

As mentioned above in the discussion, a snowball sampling method was used to recruit registered nurse participants. The survey was opened online for less than a month from March 4th – March 31st. This included a small sample size of 19 participants, with limited experience with using the EHR, as well as not asking which states these nurses were working in, so responses may not be generalized to represent an entire population. Findings also included participants coming from a wide range of different units, varying in specialties. These participants also used different EHR systems at the hospital they work in, which could have yielded unreliable results, as some systems may be more user friendly than others.

Implications for Further Research

Based on these findings, it is clear that nurses can agree that the EHR serves as a positive platform where health information can be easily accessible, as well as being able to track patient's progress and trend lab results, yet these results cannot conclude with certainty that the EHR is able to accurately support nurses' clinical decision-making. Overall, this research study supports majority of findings that other researchers have found, as well as those seen in the literature review. This shows that these nurse participants are aware that the EHR is beneficial, but that it may need more improvements in the future in order to better support their clinical decision-making by allowing them to be more time efficient. Much research still needs to be done on this advancing and constantly evolving system, and implications for future studies

would include creating some sort of instrument that is applicable and relevant to specific units that nurses specialize and work in. This will allow for researchers to better compare and contrast the efficiency and reliability of different types of EHR systems, based on responses coming from nurses who work on the same unit and utilizing the same system. Another significant idea for researchers to investigate are the nurses' expectations for any system to be able to support clinical decision-making where there may need to be better alignment between expectations and reality. Every experience is different and unique, and coming up with a way that narrows its focus on a certain area of nursing where a certain EHR system is being used will give us a better understanding of how we can better meet those needs of our health care professionals.

References

- Atherton, J. (2011). Development of the Electronic Health Record. *AMA Journal of Ethics*. 13(3), 186-189. doi: 10.1001/virtualmentor.2011.13.3.mhst1-1103
- Asmirajanti, M., Hamid, A., Hariyati, R. (2017). Nursing care activities based on documentation. *BMC Nursing*. doi: 10.1186/s12912-019-0352-0
- Chaudhry, B., Wang, J., Wu, S., Maglione, M., Mojica, W., Roth, E., ... Shekelle, P. G. (2006). Systematic review: Impact of health information technology on quality, efficiency, and costs of medical care. *Annals of Internal Medicine*. Retrieved from <https://annals.org/aim/fullarticle/723406/systematic-review-impact-health-information-technology-quality-efficiency-costs-medical>
- Cheevakasemsook, A., Chapman, Y., Francis, K., Davies, C. (2006). The study of nursing documentation complexities. *International Journal of Nursing Practice*. 366-374. Retrieved from <https://doi-org.dominican.idm.oclc.org/10.1111/j.1440-172X.2006.00596.x>
- Febowitz, J., Takhar, S. S., Ward, M. J., Ribeira, R., & Landman, A. B. (2017). A custom-developed emergency department provider electronic documentation system reduces operational efficiency. *Annals of Emergency Medicine*, 70(5), 674–682.e1. doi: 10.1016/j.annemergmed.2017.05.032
- Hendrich, A., Chow, M. P., Skierczynski, B. A., & Lu, Z. (2008). A 36-hospital time and motion

- study: How do medical-surgical nurses spend their time? *The Permanente Journal*. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3037121/>
- Huryk, L. (2010). Factors influencing nurses' attitudes towards healthcare information technology. *Journal of Nursing Management*. doi: 10.1111/j.1365-2834.2010.01084.x
- Kataoka-Yahiro, M., Saylor, C. (1994) A critical thinking model for nursing judgement. *Journal of Nursing Education*, 33(8), 351-356.
- Korst, L., Eusebio-Angeja, A., Chamorro, T., Aydin, C., Gregory, K. (2003). Nursing documentation time during implementation of an electronic medical record. *Journal of Nursing Administration*.
- Luo, X. (2019). Nurses' perceptions of the impact of the electronic health record on clinical decision-making. (pp. 12-15, 17).
- Monsen, K. A., Bush, R. A., Jones, J., Manos, E. L., Skiba, D. J., & Johnson, S. B. (2019). Alignment of American Association of Colleges of Nursing graduate-level nursing informatics competencies with American Medical Informatics Association health informatics core competencies. *CIN: Computers, Informatics, Nursing*. 37(8), 396-404. doi: 10.1097/CIN.0000000000000537
- Petiprin, A. (2016). Faye Abdellah – Nursing Theorist. *Nursing Theory*. Retrieved from <https://nursing-theory.org/nursing-theorists/Faye-Abdellah.php>
- Power, D. (n.d). Types of decision support systems (DSS). Retrived from <http://www.gdrc.org/decision/dss-types.html>
- Raterink G. (2008). A descriptive inquiry of the definitions of critical thinking and enhancers and barriers reported by nurses working in long-term care facilities. *Journal of Continuing Education in Nursing*, 39(9), 407-412. doi: 10.3928/00220124-20080901-07

- Strudwick, G., & Hall, L. M. (2015). Nurse acceptance of electronic health record technology: A literature review. *Journal of Research in Nursing*, 20(7), 596-607. doi: 10.1177/1744987115615658
- Sujansky, W. (1998). The benefits and challenges of an electronic medical record: much more than a “word-processed” patient chart. *Western Journal of Medicine*. (176-183).
- Tiffen, J., Corbridge, S. J., & Slimmer, L. (2014, January 28). Enhancing clinical decision making: development of a contiguous definition and conceptual framework. *Journal of Professional Nursing*. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/25223288>.
- Tower, M., Chaboyer, W., Green, Q., Dyer, K., Wallis, M. (2012). Registered nurses’ decision-making regarding documentation in patients’ progress notes. *Journal of Clinical Nursing*. doi: 10.1111/j.1365-2702.2012.04135.x
- Traynor, M., Boland, M., & Buus, N. (2010). Professional autonomy in 21st century healthcare: nurses’ accounts of clinical decision-making. *Social Science & Medicine*, 71(8), 1506–1512. Retrieved from <https://doi-org.dominican.idm.oclc.org/10.1016/j.socscimed.2010.07.029>
- Wass, S., Vimarlund, V., & Ros, A. (2019). Exploring patients’ perceptions of accessing electronic health records: Innovation in healthcare. *Health Informatics Journal*, 25(1), 203–215. doi: 10.1177/1460458217704258
- World Health Organization. (2005). Retrieved from <https://www.who.int/goe/en/>