



Association of Nurses' Autonomy and Perception Toward Electronic Health Records with Decision-making

Mohammad Rababa, RN, AC-CNS, PhD^{1*}; Bushra Shoman, RN, MSN¹;

Audai A. Hayajneh, RN, PhD¹; Yasmin Rababa, MD²

¹ Adult Health Nursing Department, Faculty of Nursing, Jordan University of Science and Technology, Irbid, Jordan.

* Corresponding Author. Email: mjrababa@just.edu.jo

² Medical College, Yarmouk University, Irbid, Jordan.

ARTICLE INFO

Article History:

Received: September 29, 2023

Accepted: November 19, 2023

ABSTRACT

Background: Nurses with valid and reliable clinical data documentation can make autonomous decisions about their patients' management or treatment options. **Purpose:** To examine the association of nurses' autonomy and perception toward electronic health records with decision-making. **Methods:** This cross-sectional study was conducted on a convenience sample size of 120 nurses with six months of clinical experience working in a medical/surgical unit in two hospitals in Amman, the capital of Jordan. **Results:** Nurses' perceived patient care autonomy scores correlated significantly and positively with their decision-making modes ($p < 0.010$). Similarly, nurses' perceived unit operation autonomy scores correlated significantly and positively with the nurses' decision-making modes ($p < 0.010$). Nurses with an analytical decision-making mode reported higher autonomy scores than those with an intuitive decision-making mode ($p < 0.001$). **Conclusion:** The study found significant differences in the nurses' levels of autonomy based on their decision-making modes. Also, there was a significant association between nurses' autonomy levels and their decision-making modes. Future research is recommended to improve nurses' levels of autonomy to empower and inform their clinical decisions, thus improving patients' clinical outcomes. **Implications for Nursing:** Future interventional research should be directed to improve the decision-making skills of Jordanian nurses by enhancing their autonomy and control over practice. Also, future qualitative research is recommended to examine perceived nurses' role ambiguity and conflict in Jordan.

Keywords: Autonomy, Perception toward electronic health records, Decision-making, Nurses.

What does this paper add?

1. This study provides a better understanding of nurses' decision-making and how it relates to their autonomy and perception toward EHRs.
2. This study describes how levels of nurses' autonomy are significantly different based on their mode of decision-making.

Introduction

Decision-making is integral to nursing practice and

essential for nurses often faced with daily healthcare challenges in different clinical settings. According to Tiffen et al. (2014), clinical decision-making is an ongoing process that involves data collection, interpretation, and evaluation to distinguish between pertinent and extraneous data and ultimately come up with an accurate decision. Nurses' effective decisions are translated into safe clinical care (Tower et al., 2012); therefore, nurses must make clinical decisions that contribute to the best treatment of patients based on their

unique situations (Garcia, 2020). Nurses in acute care settings including medical/surgical units face the challenge of making critical decisions every 30 seconds (Rababa & Al-Rawashdeh, 2021).

It was found that nurses who lack computer experience often feel uneasy relying on the decision support system and may not use it (Garcia, 2020). When nurses possess proficient computer skills, they feel more confident utilizing decision support systems to aid in patient care decision-making (Garcia, 2020). The electronic health record (EHR) is a digital tool that facilitates nursing decision-making (Huryk, 2010). Huryk (2010) found that nurses reacted positively to incorporating EHRs into the nursing decision-making process. EHRs provide safe and efficient patient care by facilitating accurate decision-making, reducing documentation errors, and allowing nurses more time in direct care. Using the EHR, nurses can document nursing care and activities, record progress notes, communicate patient care, and assess the care provided and the patient's reactions. Moreover, according to Garcia (2020), nurses have become critical decision-makers based on documented evidence significant for patient outcomes. Therefore, documentation should be complete, thorough, and accurate for better decision-making to improve patient outcomes. According to Kelly et al. (2011), accurate nursing documentation contributes to a structured communication system between healthcare professionals to ensure the continuity of individually planned patient care. Effective and accurate nursing documentation supports nurses to think critically and continuously about the recommended patient care. Thus, it helps the nurses develop an individual care plan for every patient very effectively (Kelly et al., 2011).

Nursing autonomy is "the authority, freedom, and discretion to indicate clinical nursing judgments concerning the care of individual patients" (Weston, 2009: 88). Also, it means the ability of nurses to make decisions within their own tasks and their appropriate responsibility to act according to the policy of that profession (Varjus et al., 2011). These definitions imply that the scope of practice authorizes nurses to make autonomous decisions related to patient care. Nurses should participate in patient care decisions and discussions (Maharmeh et al., 2016). Therefore, enhancing nurse autonomy should be one of the topmost priorities for nursing managers (Papathanassoglou et al.,

2005). Empowering nurses with a higher level of autonomy is necessary to overcome barriers related to all steps of the nursing decision-making process (Wilson et al., 2015). For example, Achterberg et al. (2013) found that when nurses have greater clinical autonomy, they tend to make autonomous decisions about the type of pain assessment tools. Therefore, nurses would be more confident about the type of pain assessment tools that they intend to use and able to provide prompt pain management. Autonomy gives nurses the confidence required to make reliable and accurate clinical decisions. On the contrary, some nursing managers often demonstrate subtle pressure on nurses and get them to select the type of pain assessment tools routinely used in their hospital, even if they contradict their decision related to pain assessment (Rababa & Aldalaykeh, 2019). Nurses with valid and reliable clinical data can make autonomous decisions about the management or treatment options for pre/postoperative patients (Rababa & Al-Rawashdeh, 2021). Also, to make effective/appropriate or prompt autonomous decisions about vital sign outcomes, nurses should base their decisions on accurate and reliable vital sign measurement and documentation (Mok et al., 2015).

However, many negative nurse and patient outcomes could occur when nurses have lower levels of autonomy or compromised decision-making skills while using electronic health records. These consequences include: (1) compromised quality of team care work and experience (Leonard & Frankel, 2011), (2) compromised quality of nursing practice and patient care, (3) poor communication and collaboration between healthcare providers, and (4) deteriorated patients' clinical outcomes (Rao et al., 2017). Despite multiple studies of nurses' autonomy, decision-making, and perception toward EHRs, no study has examined the association of nurses' autonomy and perception toward electronic health records with decision-making. Moreover, up to date, no study has examined the difference in nurses' autonomy based on their modes of decision-making. The following research questions guided this study:

- (1) What is the difference in nurses' levels of autonomy between nurse groups according to their decision modes?
- (2) What is the correlation between nurses' levels of autonomy, perceptions toward EHRs, and decision modes?

(3) What are the predictors of nurses' decision-making modes?

Therefore, this study aimed to examine the association of nurses' levels of autonomy and perception toward EHRs with their decision-making modes.

Methods

Research Design, Setting, and Sample

This cross-sectional study was conducted on a convenience sample size of 120 nurses with six months of clinical experience working in a medical/surgical unit in two hospitals in Amman, the capital of Jordan, which adopt two different documentation systems. The private hospital adopts paper-based documentation, while the public one adopts EHRs. The sample size was determined by G-power analysis, using a sample size calculator by t-test; given an alpha level of 0.05, an anticipated medium effect size of 0.5, and a desired statistical power level of 0.8. The minimum required sample size was 102 nurses. A further number was added to the number of participants to control any dropout of participants. The total sample size was 120 participants divided into two groups, 60 participants in each group.

Instruments

Demographic Data. The demographic data of nurses like age, gender, level of education, years of clinical experience, marital status, high school track, working department, level of perceived computer skills, and nurses' clinical experience was collected by asking the nurse participants to fill out the demographic questionnaire after they signed the consent form.

Nurses' Perception of HERs. To measure nurses' perception toward the EHR system, an instrument developed by Oroviogoicoechea et al. (2010) was utilized in the current study. The instrument consists of three sub-scales: (1) "Usability," which elicits responses about the ease of use and the integration of the system in daily nursing practice; (2) "Information Technology Support," which elicits responses about the relationship with the nurses, the relevance of changes introduced into the system to nursing, and problems with the system itself being understood by nurses. (3) "Information Characteristics", which elicit responses about the content and accessibility of health information through the system. Each item has five choices: 4= "strongly agree," 3= "agree," 2= "do not know," 1= "disagree," and 0= "strongly disagree." The possible total score of

the tool ranges from 0 to 80, with higher scores meaning greater positive perception. The Cronbach's alpha coefficient of the instrument in this study was 0.93.

Decision-making. Nurses' decision-making modes were measured by the Nursing Decision-making Instrument (NDMI) developed by Lauri and Salanterä (2002). The NDMI consists of 24 questions that are scored from 1 to 5, yielding a possible total score ranging from 24 to 120. A low score describes an analytic approach to decision-making, while a high score describes an intuitive approach. Each question has five choices: 1= "never or almost never," 2= "rarely," 3= "not often, not rarely," 4= "often," 5= "always." The participants choose one out of five responses to each question. The scores are added up, and the sum is interpreted as follows:

≤ 78 points: decision-making is analytically oriented.

> 78 points: decision-making is intuitively oriented.

Intuitive decision-making means quickly recognizing major clinical cues, while analytical decision-making means systematically processing relevant information (Rababa & Al-Rawashdeh, 2021). The NDMI in this study had an excellent reliability score of Cronbach's alpha=0.90.

Nurses' Autonomy. The autonomy scale of Blegen et al. (1993) was used in this study to measure nurses' autonomy. The scale consisted of 42 items, of which 21 are related to patient care and the other 21 are related to unit operations. The items of the scale are rated on a Likert scale with responses ranging from 1 to 5 as follows: 1= "nurses have no authority and accountability;" 2= "nurses assume authority and accountability when asked;" 3= "nurses share authority and accountability with others;" 4= "nurses consult with others and participate in group decisions;" and 5= "nurses have full independent authority and accountability." The scale's total score ranges from 42 to 210, with a higher score representing higher autonomy. In the original Blegen study, Cronbach's alpha values of 0.78 for the patient care decisions sub-scale and 0.92 for the unit operations sub-scale were obtained. The content validity of the entire scale was determined through an expert panel and found to be satisfactory. The scale in this study had an excellent reliability score of Cronbach's alpha=0.92.

Ethical Considerations and Data-collection Procedure

Ethical approval for this study was received from the university where the researchers work (IRB) (758-2019)

and the selected hospitals. The researchers discussed the inclusion and exclusion criteria with the hospitals' administrations to determine the eligible participants. Qualified nurses agreeing to participate signed their written consent forms. The researchers emphasized the importance of voluntary participation and ensured the privacy and confidentiality of the collected data throughout the study. Additionally, the nurses were informed that they could withdraw from the study without affecting their job security. Any personal information was de-identified. Each participant in the study was given an ID code, and their names and other personal information were crossed out. A master list of participants' names and ID codes was developed and saved in a password-protected PC. All data collection sheets were stored in a secured private office in the university, only accessible to the researchers.

Following IRB approval, the researchers obtained a letter of IRB approval from the two selected hospitals. The researchers met with each hospital's administrators to discuss the potential participants' eligibility criteria. The researchers got a list of the potential participants from the administrators. The researchers briefly introduced or described the study to the administrators. The researchers agreed with the administrators on the date/time for the consent procedure and data collection based on the availability or convenience of nurses. The researchers met with the potential participants and gave them a brief introduction or description of the study. The researchers met with the nurses who agreed to participate in a private and quiet room to get their consent forms signed. The researchers were always available during the consent procedure to answer any questions that the nurses may ask. The researchers returned to the hospitals on a different day to meet with nurses and distribute the research questionnaire. Each nurse filled out the questionnaire for approximately 20-30 minutes. The researchers asked the nurses to drop the

questionnaire forms when they finished into a secured collection box located at the front desk. The researchers checked the questionnaire forms for the quality and accuracy of data collected every 10% of data collection.

Data Analysis

Means and standard deviations were used to describe continuous variables, but frequency and percentages were used for categorical variables. The normality assumption of the continuous variables was assessed with the Kolmogorov-Smirnov test and the histograms and Box-whisker plots. The equality of variance assumption was tested using Leven's test, and the bivariate association between continuous variables was described with Pearson's (r) correlation test. The t-test of independent groups was used to compare the mean measured nurses' autonomy across the modes of decision-making for statistically significant differences. Multi-variate linear regression was used to assess the multi-variate relationship between nurses' professional and socio-demographic characteristics, perception of EHRs, autonomy, and decision-making. The SPSS IBM V.21 was used for data analysis, and the alpha significance level was considered at 0.050.

Results

Characteristics of the Study Sample

The participating nurses' average age and clinical experience in the current study are 31.4±6.5 and 7.2±4.99, respectively. Regarding the current clinical working area, 36.7% of the nurses worked on medical floors, and 19.2% worked on surgical floors. Regarding computer proficiency, 16.7% of the nurses believed that their level of proficiency was low, 45.8% believed that they had medium computer proficiency, and 37.5%, however, advised that they had high computer proficiency. A detailed description of nurses' demographics is outlined in Table 1.

Table 1. Characteristics of the study sample (N=120)

| | N | % |
|--------------------------------------|----------|-------------|
| Age (years), mean (SD) | | 31.4 (6.5) |
| Experience (years), mean (SD) | | 7.22 (4.99) |
| ≤5 years | 48 | 40 |
| 6-10 years | 51 | 42.5 |
| ≥11 years | 21 | 17.5 |

| | | |
|---------------------------------------|----|------|
| Gender | | |
| Female | 65 | 54.2 |
| Male | 55 | 44.8 |
| Marital Status | | |
| Married | 69 | 57.5 |
| Unmarried | 51 | 42.5 |
| High-school track | | |
| Scientific | 75 | 62.5 |
| Health education | 45 | 37.5 |
| Level of education | | |
| Diploma prepared RN | 27 | 22.5 |
| Bachelor prepared RN | 93 | 87.5 |
| Hospital type | | |
| Private hospital | 60 | 50 |
| Governmental hospital | 60 | 50 |
| Clinical working area | | |
| Medical | 44 | 36.7 |
| Surgical | 23 | 19.2 |
| Medical/surgical | 53 | 44.2 |
| Perceived computer proficiency | | |
| Low | 20 | 16.7 |
| Medium | 55 | 45.8 |
| High | 45 | 37.5 |

RN: Registered Nurses.

Nurses' Autonomy According to Their Decision-making Modes

The results of the t-test indicated that there were statistically significant differences in the nurses' levels of autonomy based on their decision-making modes (intuitive vs. analytical); $t_{118} = 5.42, p < 0.001$. This analysis indicated that analytical decision-maker nurses reported much higher autonomy scores than intuitive decision-makers.

Relationships between Nurses' Autonomy, Decision-making, and Perception toward EHRs

The nurses' decision-making correlated significantly, positively, and moderately with the nurses' perceived patient care autonomy, $r=0.440, p<0.010$. The nurses' decision-making correlated significantly, positively, and moderately with nurses' perceived unit operation autonomy, $r= 0.460, p<0.010$. Interestingly, the nurses' perceived patient care autonomy correlated significantly, positively, and moderately with their perceived unit operation autonomy, $r=0.47, p<0.010$.

Table 2. Correlation between the study variables

| | NDM | EHRs | PCA | UOA | Age | Exp. | Mean (SD) |
|------------------------------------|------------|-------------|------------|------------|------------|-------------|------------------|
| Nurses decision-making (NDM) | | | | | | | 3.71 (0.62) |
| Nursing perceived EHRs | -0.078 | | | | | | 72.98 (4.7) |
| Patient Care Autonomy-PCA | 0.440** | 0.071 | | | | | 2.94 (0.70) |
| Unit Operation Autonomy-UOA | 0.460** | -0.154 | 0.467** | | | | 2.69 (1.04) |
| Age (years) | 0.185* | -0.072 | 0.053 | 0.068 | | | ___ |
| Years of clinical experience (Exp) | 0.172 | -0.103 | 0.041 | 0.075 | 0.822** | | ___ |
| Computer Proficiency Level (CPL) | -0.011 | 0.181* | 0.059 | -0.181* | -0.116 | -0.11 | ___ |

Predictors of Nurses' Decision-making

The multi-variate linear regression analysis was used to assess the combined and individual associations between the nurses' socio-demographics, autonomy, and

perceptions of EHRs with their decision-making. The yielded analysis model, Table 3, was statistically significant overall, $F (12,107) =4.871, p<0.001$, indicating that at least one or more of the predictors had

a statistically significant association with the nurses' decision-making. The predictors in the model explained a substantive variation in nurses' decision-making modes; the model's R was 59.4%, and the adjusted R-squared was 28.1%. The results of the multi-variate analysis (Table 3) suggested that the nurses' perceived

patient care autonomy score correlated significantly and positively with their decision-making modes. Similarly, nurses' perceived unit operation autonomy score correlated significantly and positively with the nurses' decision-making modes.

Table 3. Multi-variate analysis of the nurses' decision-making modes

| | Beta | Std. Error | β | t-value | p-value |
|------------------------------------|--------------|-------------------|--------------|----------------|----------------|
| (Constant) | 2.523 | 0.389 | | 6.477 | 0.000 |
| Sex=Male | -0.151 | 0.107 | -0.123 | -1.411 | 0.161 |
| Age (years) | 0.126 | 0.132 | 0.102 | 0.955 | 0.342 |
| Marital status = Married | -0.147 | 0.109 | -0.118 | -1.348 | 0.181 |
| High-school track=Health education | -0.135 | 0.112 | -0.107 | -1.205 | 0.231 |
| Level of education= Bachelor | -0.049 | 0.140 | -0.031 | -0.353 | 0.725 |
| Type of hospital=Governmental | -0.252 | 0.158 | -0.206 | -1.598 | 0.113 |
| Department/Clinical working area | 0.151 | 0.086 | 0.221 | 1.756 | 0.082 |
| Nursing-experience years | 0.074 | 0.087 | 0.088 | 0.854 | 0.395 |
| Computer-proficiency level | 0.074 | 0.075 | 0.086 | 0.993 | 0.323 |
| Patient Care Autonomy | 0.274 | 0.092 | 0.294 | 2.987 | 0.003 |
| Unit Operation Autonomy | 0.183 | 0.059 | 0.308 | 3.080 | 0.003 |
| Nurses' perception of EHRs | -0.089 | 0.116 | -0.062 | -0.769 | 0.443 |

Beta=Unstandardized coefficient; β=Standardized coefficients. Dependent variable= Decision-making Modes. model R= 59.4%, Adj. R-squared=28.1%.

Discussion

The current study aimed at understanding how nurses' decision-making modes are associated with their autonomy levels and perception toward EHRs. Our findings suggest that nurses who use an analytical decision-making mode tend to have more autonomy than nurses who use an intuitive decision-making mode. This may be because most autonomy scale items relate to analytical decision-making (Rababa & Al-Rawashdeh, 2021). Another possible explanation for our findings is that the nurses in our study had more than five years of experience associated with more autonomous and intuitive decision-making skills, as stated in a previous recent study (Rababa & Al-Rawashdeh, 2021). Also, in our opinions, nurses can make autonomous decisions and have more authority, confidence, and power in justifying their decisions when going through a whole process of analytical and systematic decision-making.

The finding that there is a significant association between nurses' decision-making and their autonomy was supported by previous-research findings. Although this is the first study to examine this association, previous studies found consistent findings. Özer et al. (2020) found that improved nurses' decision-making

skills were associated with improved nurses' confidence and independence. According to Rababa and Ellis (2020), nurse managers were advised to prioritize fostering nursing independence, as it is a pre-requisite for decision-making. Previous research studies also indicated that having less control over their practice is associated with poor decision-making skills among ICU nurses (Rababa & Al-Rawashdeh, 2020; Rababa & Ellis, 2020). Furthermore, nursing independence and control over clinical practice have been recognized as significant factors in empowering more autonomous and rational decision-making (Rababa & Ellis, 2020). In the context of Jordan, there are many cultural barriers related to autonomy, complicating nurses' decision-making. These barriers include the blame culture which Jordanian nurse managers may demonstrate to nurses in case of wrong decisions. Furthermore, female nurses, who are the majority of the participants in the current study, tend to be less authoritative than males (Rababa & Ellis, 2020).

In line with the current findings, according to Papatthanassoglou et al. (2005), participants perceived the importance of nursing self-government in making prompt and effective clinical decisions. Also, they found that

nurses' ability to control their practice was an indicator of effective and rational decision-making, which improved nurses' performance and quality of nursing care. Also, Strudwick and McGillis (2015) reported that several factors affected nursing decision-making, such as nurses' level of independence. Many pieces of literature aligned with our results about the association between nursing decision-making and autonomy (Bjorvell et al., 2000; Muller-Staub et al., 2008). Papanthanasoglou et al. (2005) indicated that nurse managers with a positive attitude toward empowering nursing actions improved their clinical nursing performance regarding the speed of their decisions.

The current findings emphasize the importance of ongoing training on using decision support tools and EHRs to empower nurses' decisions. According to previous studies, nurses had inadequate knowledge and insufficient training to empower and improve their clinical decision-making skills (Eid et al., 2016; Garcia, 2020; Huryk, 2010). In Garcia's (2020) study, nurses argued that power autonomy could not facilitate and guide clinical decision-making and that nurses should receive proper training to improve their decision-making. Eid et al. (2016) found that untrained nurses have poor decision-making skills, while trained nurses have enough knowledge about decision-making principles.

Jordanian nurses are inadequately trained to analytically respond to complex clinical situations (Rababa & Al-Rawashdeh, 2020). Rafferty et al. (2001) indicated that nurses' decision-making ability depends on their knowledge, competence, and confidence. Complex decision-making should be reflected in nurses' clinical practice and the knowledge required to make such decisions. Future interventional research should be directed to improve the decision-making skills of Jordanian nurses by enhancing their autonomy and control over practice. Nurses' autonomy should be enhanced, and nurse managers should avoid applying or demonstrating their compulsory power and authority over their nurses (Al-Hamdan et al., 2013).

Implications for Nursing

Nursing managers should enhance nurses' autonomy and decision-making in clinical settings by providing adequate resources, developing new policies, incorporating decision-support tools, and conducting

continuing education and training in clinical settings. Nurses should call for national campaigns that raise awareness on how to fight the cultural barriers to enhancing nurses' autonomy. Future interventional research should be directed to improve the decision-making skills of Jordanian nurses by enhancing their autonomy and control over practice. Also, future qualitative research is recommended to examine perceived nurses' autonomy and decision-making.

Limitations

The study has some limitations that should be acknowledged. Considering the study design, a longitudinal study could better track assessment regarding the topic as time progresses. This study was confined to a small group of nurses working in two hospitals, which may not represent all nurses working in all hospitals in Jordan, affecting the generalizability of the study findings. Therefore, future studies should utilize larger samples to include nurses from other parts of the country. Also, it could be possible that using a self-reporting scale has restricted the respondents' responses. It could also be possible that unexpected confounding variables such as computer anxiety and literacy and nurses' level of computer skills may have affected nurses' and patients' outcomes.

Conclusion

This is the first study to examine the association between nurses' autonomy and perception of electronic health records with decision-making. The study found significant differences in the nurses' levels of autonomy based on their decision-making modes. Also, there was a significant association between nurses' autonomy levels and their decision-making modes. Future research is recommended to improve nurses' levels of autonomy to empower and inform their clinical decisions, thus improving patients' clinical outcomes.

Funding or Sources of Financial Support

The study received no financial support from any source.

Conflict of Interests

All authors declare no conflict of interests.

REFERENCES

- Achterberg, W.P., Pieper, M.J., van Dalen-Kok, A.H., de Waal, M.W., Husebo, B.S., Lautenbacher, S., Kunz, M., Scherder, E.J., & Corbett, A. (2013). Pain management in patients with dementia. *Clinical Interventions in Aging*, 1471-1482.
- Al-Hamdan, Z., Bawadi, H., Bawadi, H., & Mrayyan, M.T. (2013). Nurse managers' actions (NMAs) scale to promote nurses' autonomy: Testing a new research instrument. *International Journal of Humanities and Social Science*, 3 (8), 271-278.
- Bjorvell, C., Thorell-Ekstrand, I., & Wredling, R. (2000). Development of an audit instrument for nursing care plans in the patient record. *Quality in Health Care*, 9, 6-13.
- Blegen, M. A., Goode, C., Johnson, M., Maas, M., Chen, L., & Moorhead, S. (1993). Preferences for decision-making autonomy. *Image: The Journal of Nursing Scholarship*, 25 (4), 339-344.
- Eid, W., Shaban, F., Zahran, S., & El Said, K. (2016). Educational management program on enforcement autonomous decision-making among novice graduate nurses. *Tanta Scientific Nursing Journal*, 11 (2), 124-155
- Garcia, A. (2020). Nurses' perceptions of the impact of the electronic health record on clinical decision-making. *Nursing Senior Theses*, 16. <https://doi.org/10.33015/dominican.edu/2020.NURS.ST.08>
- Huryk, L. (2010). Factors influencing nurses' attitudes towards healthcare information technology. *Journal of Nursing Management*. <https://doi:10.1111/j.1365-2834.2010.01084.x>
- Kelly, T.F., Barandon, D.H., & Docherty, S.L. (2011). Electronic nursing documentation as a strategy to improve quality of patient care. *Journal of Nursing Scholarship*, 43 (2), 154-162.
- Lauri, S., & Salanterä, S. (2002). Developing an instrument to measure and describe clinical decision-making in different nursing fields. *Journal of Professional Nursing*, 18 (2), 93-100.
- Leonard, M.W., & Frankel, A.S. (2011). Role of effective teamwork and communication in delivering safe, high-quality care. *Mount Sinai Journal of Medicine: A Journal of Translational and Personalized Medicine*, 78 (6), 820-826.
- Maharmeh, M., Alasad, J., Salami, I., Saleh, Z., & Darawad, M. (2016). Clinical decision-making among critical-care nurses: A qualitative study. *Health*, 8 (15), 1807-1819.
- Mok, W.Q., Wang, W., & Liaw, S.Y. (2015). Vital signs' monitoring to detect patient deterioration: An integrative literature review. *International Journal of Nursing Practice*, 21, 91-98.
- Muller-Staub, M., Lunney, M., Lavin, M.A., Needham, I., Odenbreit, M., & van Achterberg, T. (2008). Testing the Q-DIO as an instrument in measuring the documented quality of nursing diagnoses, interventions and outcomes. *International Journal of Nursing Terminologies and Classifications*, 19 (1), 20-27.
- Orovioigoicoechea, C., Watson, R., Beortegui, E., & Ramirez, S. (2010). Nurses' perception of the use of computerised information systems in practice: Questionnaire development. *Journal of Clinical Nursing*, 19 (1-2), 240-248.
- Özer, O., Özkan, O., & Budak, F. (2020). The relationship between the nurses' perception of electronic health records and patient privacy. *Journal of Hospital Topics*, <https://doi.org/10.1080/00185868.2020.1799729>
- Papathanassoglou, E. D., Tseroni, M., Karydaki, A., Vazaiou, G., Kassikou, J., & Lavdaniti, M. (2005). Practice and clinical decision-making autonomy among Hellenic critical-care nurses. *Journal of Nursing Management*, 13 (2), 154-164.
- Rababa, M., & Aldalaykeh, M. (2019). Responding to varying levels of certainty about pain in people with dementia after initial pain assessment. *Dementia and Geriatric Cognitive Disorders Extra*, 9 (2), 271-280.
- Rababa, M., & Al-Rawashdeh, S. (2021). Critical-care nurses' critical thinking and decision-making related to pain management. *Intensive and Critical Care Nursing*, 63, 103000.
- Rababa, M., & Ellis, J.L. (2021). Nurses' autonomy and perceived barriers to pain management in nursing home residents. *Journal of Gerontological Nursing*, 47 (8), 45-52.
- Rafferty, A.M., Ball, J., & Aiken, L.H. (2001). Are teamwork and professional autonomy compatible, and do they result in improved hospital care? *Quality in Health Care*, Supplement, 2 (ii), 32-37.
- Rao, S.K., Kimball, A.B., Lehrhoff, S.R., Hidrue, M.K., Colton, D.G., Ferris, T.G., & Torchiana, D.F. (2017). The impact of administrative burden on academic physicians: results of a hospital-wide physician survey. *Academic Medicine*, 92 (2), 237-243.
- Strudwick, G., & McGillis Hall, L. (2015). Nurse

- acceptance of electronic health record technology: A literature review. *Journal of Research in Nursing, 20* (7), 596-607.
- Tiffen, J., Corbridge, S.J., & Slimmer, L. (2014). Enhancing clinical decision-making: development of a contiguous definition and conceptual framework. *Journal of Professional Nursing*. <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. *Journal of Clinical Nursing, 21* (19-20), 2917-2929.
- Varjus, S.L., Leino-Kilpi, H., & Suominen, T. (2011). Professional autonomy of nurses in hospital settings: A review of the literature. *Scandinavian Journal of Caring Sciences, 25* (1), 201-207.
- Weston, M.J. (2009). Validity of instruments for measuring autonomy and control over nursing practice. *Journal of Nursing Scholarship, 41* (1), 87-94.
- Wilson, M., Sleutel, M., Newcomb, P., Behan, D., Walsh, J., Wells, J.N., & Baldwin, K.M. (2015). Empowering nurses with evidence-based practice environments: Surveying Magnet®, pathway to excellence®, and non-magnet facilities in one healthcare system. *Worldviews on Evidence-based Nursing, 12* (1), 12-21.