

## Factors Influencing Nurses' Decision-Making Process: An Integrative Literature Review

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**Abstract:** Decision-making considered as a vital element for the nurses' professional performance and influenced by many factors. Effective nurses' decision-making process (DMP) leads to achieve the expected finding and rising patients' satisfaction. However, nurses' view and experience on the multitude of personal and organizational factors which may impact their decision-making abilities has rarely been studied.

**Purpose:** Our review aims to identify and summarize various personal and organizational factors related to nurses' DMP in acute care environments.

**Method:** An integrative literature review.

**Key findings:** Thirty-Four articles included in this integrative review and categorized into two major domains which are;

1) **The Personal Factors** which include nurse's experience, knowledge and educational level, age & gender, situation awareness, autonomy, self-confidence, intuition, nurse's physical situation;

2) **The Organizational Factors** which include multidisciplinary team factors, inter-professional collaboration, collegial support, nurse's involvement, effective communication, adequate resources, technology and evidence based practice, volume of patients in the department, serious unit conditions, stressors, time, workload, hospital policies, protocols & guidelines, and setting's environment.

**Conclusion:** The significance of this study is the comprehensive illustration of the decision-making influential factors at personal and organizational level. This study has utilized the naturalistic decision-making framework which could explain the nature of the nurses DMP to achieve the desired outcomes for patients and healthcare organizations.

**Keywords:** Nurses, decision-making process, personal factors, organizational factors, and naturalistic decision-making approach.

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### I. Introduction

The process of synthesizing knowledge to manage the situation and provide effective patient care is highly required as a fundamental role in the nursing profession<sup>1</sup>. Various surrogated terms tended to describe this process in nursing literature including decision-making process, problem-solving and nursing judgment<sup>2</sup>. Nursing decision-making occurs when one particular action is selected to be performed over the other available options<sup>3</sup>.

Nurses are required to make clinical, non-clinical, managerial, ethical and practice decisions on a daily routine basis<sup>2</sup>. Nurses continuously make decisions during the nursing process in the clinical patient care to determine and select desired outcomes and interventions using clinical reasoning skills<sup>4</sup>. According to Bucknall (2003), nurses make 238 decisions in every two working hours or 1,428 decisions within a 12-hour shift in the critical care areas<sup>5</sup>. Besides, Siirala, Peltonen, Lundgrén-Laine, Salanterä, & Junntila, (2016) found that nurse managers make over 700 various decisions for daily unit operation in peri-operative settings which affect patient safety, quality of care and patient outcomes<sup>6</sup>.

Ham, Ricks, van Rooyen, & Jordan, (2017), found and categorized the factors that influence nurses decision-making into four domains. These domains are nurses' personal characteristics, organizational factors, patient characteristics and environmental factors. Nurses' personal characteristics were identified as nursing experience, clinical knowledge, nurses' demographic factors, autonomy and individual attitudes about patient care<sup>7</sup>. The organizational factors were the interaction between the multidisciplinary team, the hospital's mission & vision, decision-making tools (protocols and guidelines) and the institutional resources<sup>7</sup>.

Despite the extensive researches identifying the nursing decision-making importance and the growing literature review body of evidence-based practices, several barriers influence nurses' DMP in hospitals<sup>2</sup>. The

uninformed nurse decision-making factors can contribute negatively to nurses performance, organizational and patient care outcomes<sup>7</sup>. These barriers found to influence professional decision-making were heavy workloads<sup>8</sup>, serious unit or patient conditions, stressors, insufficient time, complex environment<sup>2</sup>, lack of training to make decisions in the clinical practices<sup>9</sup>, inadequate situation awareness<sup>10</sup>, lack of nurses' awareness of the factors that influence effective decision-making<sup>11</sup>, and lack of resources<sup>12</sup>.

Finally, a comprehensive understanding of the DMP influential factors which relates to the nurse's practices from nursing literature is required to support nurse's decision-making in acute care hospitals<sup>2,7,13,14,15</sup>.

### **1.2 | Conceptual framework:**

Naturalistic Decision-Making (NDM) approach will guide this integrative literature review as a conceptual framework. NDM focus on the evaluation how appropriate decisions were made to achieve the effective outcomes within real environment by composing three factors relates to the process of decision-making; factors related with the decision maker, factors linked with the task, and the environmental factors<sup>16</sup>.

## **II. Purpose**

This review identified and summarized the current literature on various personal and organizational factors that influence nurses' DMP within the dynamic context of clinical hospital environment.

## **III. Methods**

The search strategy used in this review was to determine the sources of literature, keywords and specific inclusion and exclusion criteria to provide focus search in the relevant literature, and the selection process<sup>17</sup>.

### **3.1 | Sources of Literature:**

Different databases used in searching for relevant studies in the literature included PubMed, ProQuest and Cumulative Index to Nursing and Allied Health Literature database guide (CINAHL), Wiley online, and Google Scholar databases. Data were identified from all included articles qualitative, quantitative, mixed method researches and literature reviews. **Keywords:** The search in the databases focused on these key of terms; Nurses, decision-making process, personal factors, organizational factors, and naturalistic decision-making approach. The Boolean operators (and\ or\not), were used to combine and limit the search of the studies in each database.

**3.2 | Inclusion and exclusion criteria:** This search covered the published research studies in the period from 2000 to 2018. Inclusion criteria: Research articles published in peer review journals related to the influential factors affecting nurses DMP in the clinical care settings. Non-research articles such as literature reviews were included as well. These studies were written in English language and were focused in the nursing clinical field, and has searched on the topic of registered nurses and decision-making.

**Exclusion criteria:** All studies examining the DMP in the educational settings, homecare, non-nursing, non-clinical care settings such as in industry, engineering or business were excluded. Studies that reported on decision-making by patient, nursing students, and health professionals other than nurses, such as physicians, physiotherapists, and pharmacist were excluded. Also, studies regarding the ethical decision-making were excluded.

**3.3 | Search and selection process:** By following the PRISMA guidelines<sup>18</sup>, and inclusion and exclusion criteria of this review, the initial search focused on the research's title and abstract of the studies, which led to exclude 18205 articles. **Review Duration:** July 2018 to January 2019. The search of the included articles is shown in Figure 1.

Figure 1. PRISMA Flowchart Detailing Flow of Studies

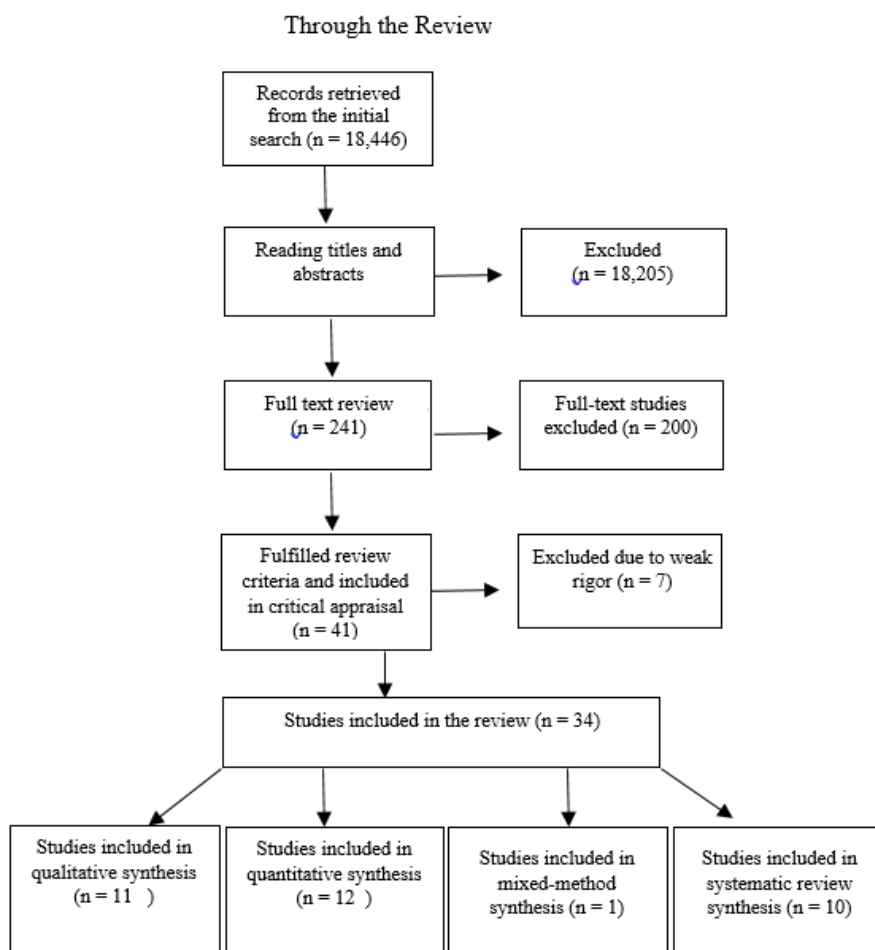


Figure 1 shows that 18446 titles and abstracts were reviewed. 18205 research articles were excluded based on the review criteria, and 200 of the remaining full-text articles did not fulfil the review criteria and were excluded. Then, seven articles were also excluded due to its weak rigor in the critical appraisal assessment. This brought the total number of thirty-four articles published between 2000–2018 fulfilled the inclusion criteria of this review and the critical appraisal.

### 3.4 | Critical Appraisal:

All the included studies in this integrative review were evaluated by using appraisal tools based on the research design of each relevant article by two reviewers to minimize the errors in data inclusion or extraction. Appraisal tools were used to assess each article's methodological quality. Each article had a calculated score to determine the inclusion or exclusion of the study in the final sample. Tool to assess the internal validity and research quality of the quantitative research was The Evaluation Tool for Quantitative Research Studies which developed by the Health Care Practice Research and Development Unit of the University of Salford in the UK. This tool was found to be useful in providing a complete assessment protocol of quantitative research studies<sup>19</sup>. Included quantitative research articles scored on a range between 43%–70% on this appraisal tool. Qualitative research appraisals were evaluated by using The Critical Appraisal Skills Programme (2006) as an appraisal instrument, because it fitted with the research designs of included qualitative studies. Included qualitative research articles scored on a range between 58%–86% on this appraisal tool. The systematic reviews appraisal was done by using the Joanna Briggs Institute appraisal tool<sup>20</sup>. The included systematic review articles scored between 70%–100% on this appraisal tool. Finally, Johns Hopkins University's Nursing Evidence-based Practice Research Evidence Appraisal Tool was used to evaluate the mixed method studies<sup>21</sup>. The included mixed method research studies scored on a range between 80%–97% on this appraisal tool. The included thirty-four articles were critically appraised, and seven articles were excluded for its weak rigor (quantitative n = 2, qualitative n = 3, and literature review n = 2).

### 3.5 | Data Extraction and Synthesis:

After critical appraisal for the included research articles, thematic analysis was applied to analyze and summarize the factors influencing nurses' DMP that found in the nursing literature. This method helped to represent the important data and prevented the exclusion of important information. The included articles were synthesized to determine the overall themes encompassing of the relevant categories. The final themes were coherent and distinct from each other. Relevant themes include;

- Nurse's personal factors.
- The organizational factors.

### 3.6 | Review Matrix:

Review matrix was used to present the data and included articles including information about each study samples, settings, methods, results, and its relevance to the current study. Review matrix was applied to synthesize and clarify the included relevant studies to facilitate the understanding of the nursing decision making in the clinical settings. Review matrix of the literature is presented on table (1,2,3,4).

**TABLE (1) Quantitative articles:**

Authors / Date	Aims/ Purpose	Design/ Methods	Context/ Setting/ Sample	Findings
Wu, Yang, Liu & Ye (2016)	To investigate the influencing factors on nurses' clinical decision-making skills	A cross-sectional non-experimental, Questionnaire.	China, 216 staff nurses, medical, surgical, and emergency departments.	Educational level, experience, and the total structural empowerment had significant positive impacts on nurses' CDM skills.
(McNamara et al., 2015)	To describe practitioners' decision making associated with the scope of practice	A national postal survey	Ireland, 2354 registered nurses (RNs) and midwives.	When making a decision about scope of practice, practitioners may consult other resources, including published frameworks, professional colleagues and line managers.
Dorgham & Al.Mahmoud (2013)	To assess dominant leadership styles, level of decision making autonomy among critical care nurses.	Descriptive cross-sectional correlation design.	Egypt and KSA. Head nurses (27); Critical Care nurses (74). Burn unit, delivery room, ICU and emergency unit.	Positive relation for nurse's length of experience and decision-making autonomy.
Wolf (2013)	To explore the relationship between the nursing clinical decision making, moral reasoning and care delivery environment	Quantitative descriptive correlational study	USA, 200 nurses, emergency department.	The less complex environment of care where nurses have a control over practice & autonomy, existing of the teamwork and communication about patients were significantly correlated with accuracy in decision making.
Merrick, Duffield, Baldwin & Fry (2012)	To describe the organizational factors that support nurse decision- making and nursing skill development.	Quantitative, questionnaire	Australia, 160 nurses.	The availability of collegial and supervisory support in the health care environment enhance the organizational possibilities among nurses to practice effective decision.
Mirsaidi & Lakdzaji, (2012)	To review the individual- social effective factors on way of nurses' participation in CDM process	Descriptive-analytical research, case study, Questionnaire	Iran, 285 nurses	Nurses CDM was significantly related to variables of age, gender, working unit, type of employment, and work background.
Paans et al., (2012)	To assess knowledge sources and reasoning skills affect the accuracy of nursing diagnoses.	A randomized factorial design	Netherlands, 249 Nurses	Nurses' diagnostic reasoning skills is vital to obtain accurate nursing diagnoses that serve as the basis for selection of interventions and the achievement of patient outcomes.
Pantazopoulos et al. (2012)	To examine relationship between nurse demographics and correct identification of clinical decisions	Descriptive, quantitative design, Questionnaire	Greece, 150 medical and surgical RNs.	Level of education influence on nurses' decision to activate medical emergency teams.
Bjork and Hamilton (2011)	To analyze nurses' perceptions of CDM and compare differences related to nurse demographic &	Descriptive cross-sectional survey design, Questionnaire	Norway, 2095 nurses.	Increased use of intuitive models of CDM was associated with years in present job, further education, male gender, age, and working in surgical units.

	contextual variables.			
Pretz and Folse (2011),	To determine the role of intuition in nurses' decision making.	Quantitative correlational design, A web-based survey	USA, 145 RNs and 30 nurses students.	General nursing preference to use intuition of decision making in clinical practice increased with experience.
Tai & Li Ng (2011)	To evaluate the influencing factors on nurses' decisions to withdraw or continue life support measures of the critically ill patients.	Quantitative cross-sectional survey. Self-administered questionnaire	Singapore, 83 nurses, ICU	Various factors influencing nurses' decisions such as patient condition and hospital policies.
Bakalis, Bowmana, & Porock (2003)	To identify Decision making in Greek and English registered nurses in coronary care units.	Quantitative, questionnaire	Greece and UK, 100 nurses (50 from each country)	English nurses had greater autonomy in the recovery phase and therefore made more clinical decisions concerning the patient psychosocial recovery than Greek nurses. Nurses perceived clinical experience as the strongest factor influencing decision-making.

#### IV. Search Outcomes

**4.1 |Studies' Samples, Location and methods:** Research in this review included eleven qualitative studies, twelve quantitative studies, one mixed-method study and ten systematic reviews. Studies were conducted in fifteen countries (the review articles were excluded from the countries counting): Australia (5), China, Egypt, KSA, Ghana, Greece (3), Iran, Ireland (2), Jordan, Netherlands, Norway, Singapore, Scotland (2), UK (2), USA (4). Total sample comprised of 6393 nurses, nurse leaders, nurse educators and head nurses. The total sample size varied between 12 and 2354 nurses.

**TABLE (2)** Qualitative articles:

Authors / Date	Aims/ Purpose	Design/ Methods	Context/ Setting/ Sample	Findings
Kydonaki & et al (2016)	To explore critical care nurses' DMPs when weaning mechanically ventilated patients in the real setting	Descriptive ethnographic study	Scotland & Greece, 13 Novice and expert Scottish and Greek nurses from ICU	Nurses used focusing decision-making strategies in order to categories information with certainty and reduce the mental strain of the decision task.
Salami, & et al (2017)	To describe the DMP and decision activities of critical care nurses in natural clinical settings.	An exploratory descriptive approach, interview and observation methods.	Jordan, 24 critical care nurses, ICU.	The decision making process is influenced by many factors, in particular the nurses' clinical experience, autonomy, and advocacy.
Balakas & et al (2015)	To describe factors related to incorporate EBP for CDM by staff nurses	Phenomenological approach, Focus group	USA, 20 nurses.	The influence of incorporating the evidence based decisions in the nursing clinical practices.
Merrick, Fry and Duffield (2014)	To explore how the Australian context supports nursing practice and collaborative decision-making.	Descriptive exploratory study. Semi-structured telephone interviews.	Australia, 15 nurses.	The inter-professional relationships impact the decision-making and enhance the advocate for patient care.
Marshall, West & Aitken (2013)	To explore the use of information by nurses making decisions in clinically uncertain situations.	An instrumental case study design, think aloud method, retrospective probing and focus group interviews	Australia , 22 critical care nurses, ICU	Clear preferentially utilizing the colleagues' opinions as a source of information during clinical decision making uncertainty
Cioffi (2012)	To presents the relevance and application of NDM for studying certain clinical decision situations.	Qualitative descriptive study with a secondary data analysis.	Australia, 19 nurses and midwives, birth units	NDM model can guide a comprehensive understanding of nurse's DMP in the clinical practices.
Dougherty & et al (2012)	To explore the DMPs that nurses use during intravenous drug administration.	Ethnographic study, focus groups, observation and interviews.	UK, 20 RNs, cancer hospital.	Many factors could impact nurses DMP during IV drug preparing & administration include: interruptions; identification and knowing the patient; routinized behavior,

				and prevention of errors.
Tower et al (2012)	To explore nurses' decision making of patient care documentation in a naturalistic paradigm.	Qualitative study Naturalistic paradigm. Think-aloud methods	Australia, 17 RNs.	Nurses demonstrate situation awareness at various levels in their DMP.
Lavellea and Dowling (2011)	To describe the factors that influence critical care nurses when deciding to wean patients from mechanical ventilation.	Qualitative study, semi-structured interviews and a vignette.	Ireland, 22 RNs, ICU.	Six major themes influencing nurses' decision to wean: physiological influences; clinical reassessment and decision making; the nurse's experience, confidence and education; the intensive care working environment; and use of protocols.
Seright (2011)	To explore the decision-making of rural novice RN.	Grounded theory, interviews	USA, 12 novice nurses.	Rationalizing, gathering information, conferring with co-workers and experience
Twycross & Powls (2006)	To gain an understanding of how children's nurses make clinical decisions.	Qualitative, think aloud technique.	Scotland, 27 nurses, medical and surgical wards.	All the nurses in the sample used the analytical model of decision-making, and appeared to use backward reasoning strategies regardless of their level of expertise.

4.2 | Key findings:

Factors found to influence nurses' decision-making in this integrative review had been emerged and categorized into two major themes which are; 1) The Influence of Personal Factors on Nurses decision-making, 2) The Influence of the Organizational Factors on Nurses' decision-making. The personal factors that found in the nursing literature to have an influence on nurses' decision-making were nursing experience<sup>7,13,14,22,23,24,25</sup>, knowledge and education level<sup>7,13,22,23,24,27,26</sup>, situation awareness<sup>10,14,28,29,49</sup>, autonomy<sup>7,13,30,31,32</sup>, intuition<sup>13,14,33,34</sup>, nurses' age & gender<sup>13,30,31,32</sup> and nurses' physical situation<sup>7,35</sup>. While, the organizational factors that found in the nursing literature to have an influence on nurses' decision making were the volume of patients, stressors, time and setting's environment<sup>2,31</sup>, serious unit<sup>2,28</sup>, inter-professional collaboration, collegial support, nurse's involvement<sup>7,14,26,36,37,38,39</sup>, peer learning and consultation, expert opinion, leadership, interpersonal relations, expert approachability<sup>12,40</sup>, published frameworks, line managers support<sup>41</sup>, effective communication<sup>42</sup>, collegial trustworthiness<sup>40</sup>, hospital policies, protocols and guidelines<sup>12,37,43,44</sup>. Also, the organizational resources availability such as beds, equipment tools, supplies, transportation vehicle<sup>12</sup>, staff number<sup>12,45</sup>, sufficient time<sup>12,45</sup>, workload<sup>7,8,45</sup>. Moreover, evidence based practices (EBP)<sup>46</sup>, technology<sup>23</sup>, health informatics, the internet, social networking, phones calls, text messaging<sup>12</sup> were found as influences to nurses decision-making process. The themes and related categories are explained next.

TABLE (3) Systematic Reviews:

Authors / Date	Aims/ Purpose	Design/ Methods	Context/ Setting/ Sample	Findings
Ham & et al (2017)	To identify factors that contribute to nurses and midwives in hospital setting making sound clinical decisions.	Integrative review	From 2000 to 2014	38 articles, factors found to influence professional nurses' and midwives' CDM were sorted into four domains: personal characteristics, organizational factors, patient characteristics, and environmental factors
Johansson, Ronnberg & Palmqvist (2017)	To review the characteristic of RN's intuition in the nursing process and decision-making.	Integrative review	From 1985–2016	16 studies, The characteristics of intuition in the nurse's daily clinical activities include application, assertiveness and experiences.
Nibbelink and Brewer (2017)	To identify and summaries factors and processes related to registered nurses' patient care decision-making in	Integrative review	Published articles between 1998–2015.	17 articles, nurses employ a variety of decision-making factors including experience, unit culture influences; education; understanding patient status; situation

	medical–surgical environments.			awareness; and autonomy.
Johansen & O'Brien (2015)	To gain an understanding of the concept of decision making as it relates to the nurse practice environment	Rodgers' evolutionary method on concept analysis.	From 1952 to 2014	Nursing decision making is a complex process, integral to the nursing profession includes attributes, antecedents, and consequences, and contextual factors that influence the process and affect patient outcomes.
Cappelletti et al. (2014)	Review literature on clinical judgement and reasoning in nursing	Systematic review	From 1980 to 2012	15 studies, the findings were generally support Tanner's original model.
Stubbings et al. (2012)	Review the literature related to situation awareness and clinical decision-making	Integrative review	From 1965 to 2011	Five studies. Individual factors influencing situation awareness in the decision making, interpersonal behaviors, working relationships and patient care.
Goethals, de Casterle & Gastmans (2011)	To synthesize the nursing qualitative researches on DMP in cases of patient physical restraint.	Systematic review	Research papers published between 1990-2010	12 published papers, decision-making as a complex trajectory focused on safety, ethical values, nurse-related factors and context-related factors influencing decision-making.
Lane and Harrington (2011)	To explore the factors that influence nurses' decision to use physical restraint for elder patient.	Systematic Review	Published studies between 1992 and 2010.	18 studies. Nurse's decision of using physical restraint was centered to increase 'patient safety' and harm prevention
Thompson and Stapley (2011)	Review the literature of educational interventions and clinical decisions	Systematic review	From 1960 to 2010	24 studies. Educational interventions to improve nurses' judgements and decisions are complex and the evidence from comparative studies does little to reduce the uncertainty about 'what works.
Cranley, Kushniruk, & Nagle, (2009)	To determining how nurses' clinical uncertainty has been conceptualized in the nursing literature.	Systematic review	From 1990 to 2007	A total of 23 studies. The key themes were sources of uncertainty, coping strategies, degree of uncertainty, information seeking in the context of clinical decision-making

**TABLE (4) Mixed Method Articles:**

Authors / Date	Aims/ Purpose	Design/ Methods	Context/ Setting/ Sample	Findings
Oduro-Mensah, et al (2013)	To explore the "how" and "why" of care decision making by frontline providers of maternal and newborn Services.	Mixed method, exploratory, cross sectional study. desk review of protocols & guidelines, questionnaire & observational checklist	Ghana, 44 nurses, maternal and neonatal units.	Series of imperative factors affecting DMP including peer learning and consultation, expert opinion, leadership and interpersonal relations and the expert approachability during emergency cases.

## V. Discussion of the Findings

### 5.1 | The Influence of Personal Factors on Nurses decision-making:

Numerous researches have explored the nurses' personal factors that influencing on decision-making<sup>24</sup>. The quality of nurses' response and decision-making for patients' care are varies according to their knowledge, experiences, and skills<sup>16,30</sup>. Understanding the influencing factors of nurses' decision-making skills can improve nurses' clinical practice in order to provide safe and high-quality patient care<sup>47</sup>.



### **5.1.1 Nurse's Experience:**

Several studies found that nurse's experience has a major influence on nurse's decision-making<sup>7,14,24</sup>. Wu et al., (2016) found that the previous clinical experience would work as a valuable reference for the nurses in the clinical settings. According to Ham et al., (2017) the most mentioned factor that influence nurses' and midwives decision-making in nursing literature was the clinical experience<sup>7</sup>. These findings confirmed by Nibbelink & Brewer, (2017) indicating that nursing experience in clinical settings represented the largest impact in the DMP in nursing literature<sup>14</sup>. Similarly, Salami et al., (2017), found that experienced nurses had the power to take some risky non-nursing decisions and the power to question the physicians about their treatment decisions<sup>23</sup>. These attributes of experience and intuitive decision-making were not found with less experienced nurses in critical care settings<sup>23</sup>. Experience increase nurses' power degree, confidence level and their awareness about the taken decisions<sup>23</sup>. Nurses believed experience as a vital factor influencing the decision-making of post-myocardial infarction care<sup>30</sup>. However, the result of Twycross & Pows, (2006) indicated that experienced and less experienced nurses were similar in planning the nursing interventions in relation to decision-making regardless of their level of expertise<sup>48</sup>.

### **5.1.2 | Knowledge and Education Level:**

Nurses' knowledge and level of educational certainly influence the decision-making. For instance; Bjørk & Hamilton, (2011) presented a significant positive link between the nurse's educational level and their decision-making ability<sup>13</sup>. This finding seemed to be consistent with other research which found that nurses who were holding a bachelor's degree and other critical care certificates were able to demonstrate an advanced reasoning skills in clinical decisions<sup>27</sup>. Likewise, Wu et al., (2016) found a significant result between nurses' decision-making skills and the educational level. The nurses who were raising their educational level would be able to make higher effective decisions through building a theory base to guide the decision-making<sup>22</sup>. The nurse's clinical knowledge should be parallel to the years of working experience to provide qualified patient care. Moreover, it was confirmed that the professional training was significantly enhancing nurses' knowledge and skills to make sound clinical decisions<sup>7</sup>. However, the knowledge and skills that differ the more expert nurses in their professional decisions from novice nurses still not well understood and need further investigation<sup>23</sup>.

### **5.1.3 | Situation Awareness:**

When nurses recognize the available information of a current situation in order to make the right decisions, it will enhance the appropriate patient care<sup>14</sup>. Nurses' cognitive abilities to predict the best practices were highly associated with self-confidence and experience, which have a positive effect on clinical decision-making skill<sup>29</sup>. Nurses use the situation awareness at various levels to choose the right decision when assessing newly admitted patients and discharging patients<sup>49</sup>. Goethals, Casterle, & Gastmans, (2011), indicated that one of the nurse-related factors in nursing literature was inadequate situation awareness of possible physical and psychological consequences of patient restraint, which would negatively influence nurse's decision-making<sup>10</sup>. Moreover, Cappelletti et al., (2014), found that nursing knowledge, situation awareness, and previous experience would assist nurses to gather the cues and information and bring it to a current situation which helps in making the right clinical decisions<sup>28</sup>. These results further support the idea of decision-making and situation awareness were related to how nurses perceived patients' progression during the care continuum in the hospital<sup>49</sup>. The improvement of situation awareness could be achieved by educational preparation and practical training of an inter-disciplinary team to facilitate the patient outcomes<sup>29</sup>.

### **5.1.4 | Autonomy:**

Nurses' ability to make sound decisions require to have professional autonomy in patient care and greater participation in organizational decisions<sup>28</sup>. This study supports evidence from previous study findings of Dorgham, (2013) who found a positive relation for nurse's length of experience and decision-making autonomy. Nurses who have been working for (10-20 years) were showing a higher autonomy level more than other nurses who had lesser years of experience<sup>50</sup>. Also, nurses in the burn, delivery room, and emergency units reported higher decision-making autonomy than other nurses who were working in the medical intensive care unit<sup>50</sup>. In addition, Nibbelink & Brewer, (2017) highlighted that autonomy and independence in various nursing interventions would contribute to the clinical decision making process<sup>14</sup>. In contrast to the previous studies, Wu et al., (2016) indicated that having more work flexibility, autonomy and a higher level of formal empowerment could cause significant negative effects for those nurses with weak clinical decision-making ability. As it might impose some psychological load on nurses and consequently hinder their decision-making skills<sup>24</sup>.

### **5.1.4 | Nurses' Age and gender:**



Nurses' demographic factors such as gender, age, and race were found to influence the clinical decision making (CDM)<sup>7</sup>. The nurses' age in some studies had a negative effect on nurses' ability to make patient care decisions<sup>32</sup>, or a positive effect in an emergency cases<sup>30</sup>, and lead to more participation in the CDM<sup>31</sup>. Likewise with nurses' gender, there was a significant difference in the male and female nurses score in terms of CDM, as the maximum mean score belonged to male nurses in some previous studies<sup>31</sup>. Bjørk & Hamilton, (2011) found that less experienced male nurses' decision-making scores were similar to female nurses' scores who had more than ten years of working experience, which indicate that male gender perceived different models of decision-making process<sup>13</sup>.

### **5.1.5 | Intuition:**

Intuition play familiar part in the nursing judgement abilities and decision making skills. Nurses vary from each other in following their intuition or analyzing patient's needs, depending on the task complexity and their experience level<sup>7</sup>. For instance; Melin-Johansson et al., (2017), found that there was a clear correlation between nurses' knowledge, experience, working environment and their application of intuition in clinical decisions. When nurses integrate both objective data and intuitive data in patient's care, their desire to make confident judgments and actions would be increased<sup>33</sup>. Clearly, nurses with greater experience level seemed to have a stronger preference and confidence for using intuition in their decision-making<sup>34</sup>. This intuitive decision-making ability distinguishes experts from novice nurses in managing the situations through recognizing the patterns of cues from the environment quickly depending on the past experience in a confident manner<sup>33,34</sup>. As well as the further education that nurses acquired was significantly led to make more intuitive decisions than the other nurses with only 2.5–3 years of education<sup>13</sup>.

### **5.1.6 | Nurse's Physical Situation:**

Nurses frequently work with the physical or psychological situation may affect their decision-making ability<sup>7</sup>. In previous studies on decision making, different variables have been found to be related to the effect of psychological and physical condition in nursing performance<sup>7</sup>. According to McClelland (2007), fatigue was one of the physical situations that have been reported by the nurses who were working a 12-hr shift which can have a negative impact on their decision-making. Due to the fatigue, nurses were sleepier and more stressed in making rapid patient decisions<sup>35</sup>.

## **5.2 | The Influence of Organizational Factors on Nurses decision-making:**

Nurses' decision-making surrounds by various complex organizational factors. These factors are seen as the characteristics of the resources and the environmental elements which influence nurse's practice. The dynamic and complex interaction between this context and nursing decision-making depends on the distinctive variable options being undertaken on the time of deciding<sup>2</sup>. The majority of the recent studies relate these contextual factors in various clinical situations such as the volume of patients, serious unit or patient conditions, stressors, time and setting's environment<sup>2,31</sup>. Cappelletti et al., (2014) asserted that nursing clinical judgments influenced by the culture of the nursing unit, the surrounding context in which the situation occurs, information gathering and sharing between the multidisciplinary team<sup>28</sup>.

### **5.2.1 | Multidisciplinary Team Influence:**

Many studies have indicated positive outcomes of inter-professional collaboration, collegial support and nurse's involvement in patient care decisions<sup>7,14,26,36,37</sup> considering this as an organizational factors influencing nursing decision-making. For instance; Merrick, Fry, & Duffield, (2014) found that the organizational factors such as coworker support, supervisory support and inter-relationships have a notably effect on nurses' decision-making in many ways leading to enhance the organizational outcomes and patient care<sup>39</sup>. Trusting inter-professional relationships between nurses and physicians were perceived to foster collaborative decision-making<sup>39</sup>. According to Merrick, Duffield, Baldwin, & Fry, (2012) nurses who had the adequate social support were able to collaborate with medical and nursing colleagues in making patient care decisions and had a greater influence in the workplace<sup>38</sup>. Also, the availability of collegial and supervisory support in the health care environment enhanced the possibilities for the nurses to practice effective decision and therefore positive patient care outcomes, skills advancement, and increasing nurse's retention<sup>38</sup>. Peer learning and consultation, expert opinion, leadership, interpersonal relations and the expert approachability during emergency cases found as a fundamental factors affecting nurses' decision-making<sup>12</sup>. When making a decision about scope of practice, nurse practitioners may consult other resources including published frameworks, professional colleagues and line managers<sup>41</sup>. Indeed, the less complex environment where nurses have control over practice and autonomy, existing of the teamwork and effective communication about patient's care would increase the accuracy of nurses' decision-making and quality of clinical judgment<sup>42</sup>. During clinical decision-making uncertainty, nurses usually consider the colleague as a source of information to enhance the decision-

making accuracy<sup>40</sup>. Important considerations were emphasized by nurses while selecting a colleague for a decision-making consultation included more experienced individuals, acquiring clinical position or role, collegial trustworthiness, and approachability<sup>40</sup>.

### **5.2.2 | Organizational Resources:**

The organizational resources found in the literature as policies, protocols, decisional tools, systems, human and non-human resources to have an influence on nurses' decision-making. One of the main factors influencing nurses' decision to wean patients from mechanical ventilation was the use of organizational weaning protocols<sup>37</sup>. Hospital policies, protocols and guidelines were used as a decision-making aid to manage patient care situations such as when nurses were not sure about accurate steps of maternal and neonatal care<sup>12</sup>, drug administration to prevent drugs errors<sup>43</sup>, learning tool to guide junior nurses and students for the weaning process<sup>37</sup>, patient withdrawal or continuation of life support treatment<sup>44</sup>.

Nurses interact with patients all the time, and therefore, they continually make decisions centered on patients' needs. Centered patient care requires adequate staffing, beds, equipment tools, supplies (e.g., oxygen cylinder) and referral transportation vehicle & ambulance services<sup>12</sup>. Contextual factors including time, resources availability, staff number, and management support which also impact nurses in their DMP and affect their ability for reassessment of their patient restraint decisions<sup>12</sup>. According to Goethals et al., (2011), insufficient time impede nurses ability to discuss their patient's physical restraint decision with physicians which make this decision even more complex<sup>10</sup>. Similarly, Lane & Harrington, (2011), have emphasized that the increasing workload and nursing shortage in the work environment, had a major negative impact on nurses' decision to use the physical restraint on the elder patient<sup>8</sup>. Staffing levels should be sufficient to decrease workload in the nursing unit to facilitate the adequate time in order to make right patient care decisions<sup>45</sup>. Imperatively, the availability of all resources (human, non-human and technical), would improve compliance with organizational standards and assist nurses to make effective decisions<sup>12</sup>.

### **5.2.3 | Technology and Evidence Based Practice:**

Technology and EBP in the new era of healthcare services intended to overcome some of the challenges facing nursing practices and intended to support nurses' decision-making. Thus, integrating the best evidence with nurses' knowledge and experience into nurses' practices can lead to improving the nursing reasoning skill and CDM<sup>46</sup>. This finding was also reported by Cioffi, (2012) who confirmed that the use of the technology and health informatics would support and enhance the nursing decision-making in the acute care settings<sup>23</sup>. This view is supported also by Oduro-Mensah et al., (2013) who pointed out that nurses decision-making could be improved through various ways and interventions such as the use of the internet for medical journals, social networking, phones calls, and text messaging<sup>12</sup>. These measures were considered as an effective way to enhance nurses' knowledge and decision-making during emergency cases<sup>12</sup>. Nurses had greater confidence in their capability to give acceptable justification for the patient care decisions during the discussion with the health care team and patients' families as a result of integrating the EBP<sup>46</sup>.

### **5.3 | Naturalistic Decision-Making Theoretical framework:**

This paper provides a discussion about the NDM and its relevance for nurses' practices in the natural hospital environment. The use of NDM in the exploration of decision-making in real settings of the decision makers was supported by several studies related to nursing profession<sup>14,16,26</sup>. This review included various factors found essential to NDM framework including the personal factors of the decision maker, factors linked with the task, and the environmental factors<sup>16</sup>.

The personal factors in the NDM have a combined role and found in the decision maker experience, knowledge, confidence level and situation awareness<sup>14,16</sup>. This study reveals that experience, knowledge, confidence level, autonomy, nurse's values, and nurse's physical status, and clinical skills are the key components factors influencing nurse's DMP. In the absence of these personal characteristics, nurse's decision-making can be ineffective.

Based on the NDM framework, the environmental factors include organizational goals and norms, time-limit, feedback loops, and multiple players<sup>14</sup> which share similarities with the findings of this review. For instance; workload and time pressure were described as the highest organizational factors influence nurse's DMP<sup>8,10,45</sup>. Nurses were utilizing the NDM by following the hospital policies, guidelines and goals in order to take an appropriate decision<sup>12,37,43</sup>. The aspect of involving multiple players and feedback loops was described in this review as an essential component in the decision-making based on the situation and the type of the decisions, and includes nursing superiors, nursing colleagues, health team members, and hospital administration<sup>38,39,41,42</sup>.

NDM indicates that the uncertain and complex decisions are high stakes decisions made by decision makers considering the possible outcomes of the decision<sup>14</sup>. In the clinical nursing care, nurses have numerous

alternative options to consider with the unpredictable attributes and often within a rapid timeframe which makes nurse's decision-making a complex task<sup>16</sup>. Many studies in this review described various decision-making challenges which can complicate the nurses' decisions and cause serious consequences for the organizational and patient outcomes<sup>8,10,12,40,42,45</sup>.

#### **5.4 | Implications for practice, education and research:**

Based on the research findings, decision-making in nursing profession is a complex process that influenced by several factors<sup>7</sup>. Further educational initiatives and future researches that enhance the understanding of the impact of these factors on nurse's decision-making are needed. In order to expand the understanding of DMP, it will be necessary to conduct a further study utilizing the NDM to draw similarities and differences between the different types of decisions such as managerial, clinical and ethical decision-making.

Acute care organizations can benefit from the findings supported in this review by creating a positive and more supportive environment to increase nurse's competence level. The supportive environment is essential to the nurses DMP, and this could be reached by improving communication and collaboration among the departments to enable the greater participation in the DMP. Staff development programs and opportunities can be advanced to include simple instructional design for improving the proficiency in decision-making in an advanced manner to reach an optimal patient and organizational outcomes.

Many constraints found in this review affect the nursing profession, the patient's outcome, and health care system productivity. Some organizational constraints impact nurses' practices, and the major crucial constraints raised from the limitations of available (human and non-human) resources. To overcome and solve these major challenges, the number of nursing workforces should be well maintained, educated, trained to be able to apply the essential competencies in patient care decisions.

### **VI. Conclusion**

This review presented and examined the current literature of the various factors that influence nurses' DMP within the dynamic context of clinical hospital environment. The significance of this review is the comprehensive illustration of the decision-making influential factors at personal and organizational level which has supported the previous studies. Also, this study has utilized a framework which could explain the nature of the nurses DMP, and emphasized the imperative need to strengthen nurse's supportive environment for enhancing the quality of nursing care. Finally, this review also highlighted that improving the nurse's ability to make the right decisions would foster the achievement of the desired outcomes for patients and healthcare organizations.

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