

Student nurses' leadership and management competencies and key performance indicators (KPIs) for patient safety outcomes in Nakhon Pathom, Thailand



Paulo Carl G. Mejia^{1,2,*}, Benjamin Joel L. Breboneria³, Hamdoni K. Pangandaman⁴, Jonaid S. Sadang⁴, Bunyaphak Hengnalen¹, Jacqueline M. Calaycay⁵, Naima D. Mala⁴, Alexander M. Estanislao⁵, Ryan L. Diamla⁴, Warlito S. Penullar Jr.², Punyanut Phumchaisai¹, Maria Elisa Dijamco¹, Louela V. Cordova-Acedera¹

¹College of Nursing, Christian University of Thailand, Nakhon Pathom, Thailand

²Department of Nursing, Al Ghad International College for Applied Medical Sciences, Najran, Saudi Arabia

³Department of Nursing, College of Applied Medical Sciences, King Faisal University, Al-Ahsa, Saudi Arabia

⁴College of Health Sciences, Mindanao State University, Marawi, Philippines

⁵College of Health Sciences, Pamantasan ng Lungsod ng Marikina, Marikina, Philippines

ARTICLE INFO

Article history:

Received 2 September 2019

Received in revised form

20 December 2019

Accepted 21 December 2019

Keywords:

Nursing students

Clinical competency

Nursing care management

Patient safety

Risk management

ABSTRACT

Limited studies have reported about student nurses' level of competencies in performing leadership and management functions during their practicum and nursing internship in clinical areas. Also, safe and quality nursing practice is a major concern in clinical nursing practice settings. The aim of this study is to determine the relationship between the competencies of student nurses in performing leadership and management functions and their level of compliance to key performance indicators (KPIs) for patient safety outcomes at a private university in Nakhon Pathom, Thailand. This descriptive-correlational study includes 450 final-year students pursuing Bachelor of Nursing Science degrees (both Thai and International Programs) and are currently enrolled in nursing leadership and management courses, as well as professional nursing externship programs in a private university in Nakhon Pathom, Thailand. The findings of this study indicated that most of the Thai student nurses are competent ($\bar{x}=3.23$, $SD\pm 0.66$) in performing nursing leadership and management functions. Moreover, the majority of student nurses demonstrated a moderate level of performance ($\bar{x}=2.62$, $SD\pm 0.96$) of patient safety outcomes. Pearson correlation coefficient revealed a relatively high positive correlation between nursing leadership and management competencies and key performance indicators (KPIs) of patient safety outcomes among the respondents ($r=0.96$; $p=0.000$) at a significant level of 01. Further, these findings support the results of other previous studies indicating the level of competence of student nurses in performing nursing leadership and management functions. However, they contradict previous findings in which student nurses demonstrated a moderate level of performance to patient safety outcomes. Therefore, nursing schools must provide education, teaching, and training related to nursing leadership and management to student nurses as a way of preparing them to be competent to perform future nursing leadership roles.

© 2020 The Authors. Published by IASE. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

The incidence of patients' harm while in the hospital facilities continues to increase (Drake,

2015). Specifically, it was reported that there are about 98,000 hospital mortalities occurred annually due to medical errors committed by hospital staff (Thomas, 2011). In addition, the Kohn et al. (2000) reported that approximately 44,000 to 98,000 patient deaths are reported every year as a result of medical errors. Medical errors are most likely to occur in nursing situations (Berman and Snyder, 2012). Some medical errors are very serious and can result in physical trauma, injury, disability, and even death. Most commonly reported medical errors include patient falls, medication errors, pressure

* Corresponding Author.

Email Address: paulo_mejia@yahoo.com (P. C. G. Mejia)

<https://doi.org/10.21833/ijaas.2020.02.015>

Corresponding author's ORCID profile:

<https://orcid.org/0000-0002-4466-1148>

2313-626X/© 2020 The Authors. Published by IASE.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

wounds, and infection-related complications (Berman and Snyder, 2012; Tomey, 2009; Feliciano et al., 2019a). However, the majority of these medication-related events that can lead to patient harm as a result of actions by a health care professional are preventable occurrences (Mejia et al., 2019a). Thus, quality management aims to develop a risk management standard that will decrease the rate of patient-care related errors and will promote good management practice (Crowther, 2004).

Several studies suggest that there is a lack of favorable leadership in nursing (Mejia et al., 2019b). Leadership affects nurse satisfaction, acute care work environment, and patient outcomes. Several challenges are related to leadership roles like an increase in job responsibilities, poorly defined job descriptions, and the lack of proper education/training on how to lead others (Towle, 2015). Nurses, as leaders, play a role in safeguarding and ensuring that safe and quality nursing care is delivered (Mejia et al., 2019a), producing positive patient outcomes and must create a favorable impact in each nursing unit with regards to patient safety (Drake, 2015). Thus, nurses must play a key leadership role in managing, coordinating and integrating nursing care for the effective delivery of health services (Sadang et al., 2019; Mejia et al., 2019b).

In line with this, clinical placements in nursing leadership and management courses among student nurses assist them in preparing for nursing leadership roles in the future (Raymond et al., 2016). Safe and quality nursing practice is a major concern in clinical nursing practice settings (Jang and Lee, 2017). Determining the variables that are related to the provision of safe patient care is important in today's healthcare practice. Understanding the role of nursing in promoting organizational safety is substantial in the successful implementation of patient safety interventions (Stock et al., 2010). Furthermore, leaders in healthcare must emphasize the importance of developing strategies to promote patient safety practices. As a result, professional regulations developed a standard that creates a culture that promotes safety and improves health outcomes (Chenot and Daniel, 2010). Nursing schools are concerned about the availability of adequate rotational experiences for student nurses' practical learning in clinical settings (Curtis et al., 2011). Nursing faculty staffs are even facing challenges in promoting a patient safety culture among nursing students (Raymond et al., 2016).

Furthermore, Key Performance Indicators (KPIs) are fundamental evaluative criteria that are important in the evaluation process to help identify further issues, reflect the performance of health intervention, facility, or service of a particular system (ACSQHC (2017) Draft Performance Indicator). The need for development of relevant nursing management competencies in the effective coordination and organization of resources in the workplace are needed to be able to operate

effectively in these critical positions as nurses in ensuring the effective delivery of quality nursing care (Feliciano et al., 2019b; Lin et al., 2007; Lin et al., 2005). Understanding management principles is an important part of fulfilling nursing responsibilities (Sullivan, 2012). Meanwhile, patient safety outcome is the degree to which patients are free from accidental injury. This pertains to key performance indicators that promote patient safety through medication safety, infection control, pressure ulcer, fall prevention, and blood management (ACSQHC, 2017). Nurses, as the critical manpower resources, are considered the most important components of the total hospital patient care production with the quality of care is considered a key hospital performance measure. Certain studies have linked hospital characteristics (e.g., quality of hospital care, hospital-level outcomes, and hospital efficiency outcomes) and prove that there appears to be a positive relationship between certain measures of nursing resources and hospital outcomes like patient satisfaction, nursing care satisfaction, nurses' index satisfaction, and inpatient mortality (Sloane et al., 2018).

Nowadays, there are increasing studies about nursing leadership and management competencies among nursing staff. However, only a few or limited studies have reported about student nurses' level of competencies in performing leadership and management functions during their practicum and nursing internship in clinical areas. Likewise, safe and quality nursing practice is still a major concern in clinical nursing practice settings. Thus, nursing faculty staffs face challenges in enhancing a patient safety culture among baccalaureate nursing students pursuing a baccalaureate. Through this research article, the researchers hope to contribute to the existing literature by adding knowledge about the level of competencies of student nurses in performing their leadership and management functions during their clinical practicum and professional nursing internships. This study was able to determine the level of compliance with key performance indicators (KPIs) for patient safety outcomes among final year student nurses. Lastly, this study was able to determine if leadership and management functions are significantly related to compliance with the key performance indicators (KPIs) for patient safety outcomes among student nurses.

This research study utilized the concepts of nursing leadership and management by the Thailand Nursing and Midwifery Council which concentrates on 4 major functions, namely, leadership skills, quality improvement, teamwork, and resource utilization (Lunberg and Boonprasabhai, 2002). Meanwhile, the key performance indicators (KPIs) for patient safety outcome is currently not available in Thailand context which urged the researchers to utilize the Australian Council of Healthcare Standards (ACSQHC, 2017) Draft Performance Indicator for patient safety outcomes, namely, medication safety, infection control, pressure ulcer

prevention, fall prevention, and blood management. These reflect the conceptual framework of this study.

The researchers seek to answer the following research questions:

1. To determine the biographical profile of Thai student nurse respondents.
2. To determine student nurses' competencies in performing their leadership and management functions during their clinical practicum.
3. To determine the level of performance of the student nurses in compliance with key performance indicators (KPIs) for patient safety outcomes.
4. To determine the presence of a relationship between leadership and management competencies and the level of performance using key performance indicators (KPIs) for patient safety outcomes among student nurses during their clinical practicum.

1.1. Hypothesis

Ho₁: There is no significant relationship between student nurses' leadership and management competencies, and the level of performance using key performance indicators (KPIs) for patient safety outcomes during their clinical practicum.

2. Methods

2.1. Study design

The descriptive-correlational study design has been utilized in this research to determine the significant relationship between student nurses' competencies in performing leadership and management functions (independent variables), and key performance indicators (KPIs) for patient safety outcomes (dependent variables).

2.2. Setting and sample

The sample of the study includes 450 final year students pursuing a Bachelor of Nursing Science degree (both Thai and International Programs) who are currently enrolled in nursing leadership and management courses, as well as in professional nursing externship programs in a private university in Nakhon Pathom, Thailand. The sample was selected using purposive sampling.

2.3. Ethical consideration

This study obtained underwent rigorous technical and ethical considerations from the Institutional Review Board Approval (IRBA) of the Christian University of Thailand with approval number P. 16/2018. The ethical approval was given on May 30, 2018. Thus, respondents' rights and protection were taken into consideration while conducting the study. Further, bioethical principles

were observed, namely, justice, autonomy, fidelity, beneficence, maleficence, and confidentiality.

2.4. Measurement/instrument

The researchers developed their own survey tool which was adapted from 2009 Thailand Nursing and Midwifery Council Nursing Core Competencies Standards among Thai Registered Nurses and ACSQHC (2017) Draft Performance Indicator. The survey tool contains the following: 1) Student nurses' competence in leadership and management functions and 2) Key performance indicators (KPIs) for patient safety outcomes. The said research tools underwent construct and content validity and were evaluated by five (5) experts in the nursing profession. The tool obtained a CVI index score of 0.80. The tools were considered reliable and internally consistent with a Cronbach alpha score of 0.96. Furthermore, a pilot study (n=40) was conducted to test the research instrument tool.

The survey tool contains a 4-point Likert scale to determine student nurses' response and self-assessment toward a particular key performance indicator. Afterward, a total score is computed by summing the mean rating scale, each of which is scored for the intensity and degree of favorability. The mean scores were verbally interpreted through a standard transmutation of 4-point Likert's scale. "1.00 to 1.80 denotes very low competence/compliance; 1.81 to 2.60 signifies low competence/compliance; 2.61 to 3.40 represents moderate competence/compliance; 3.41 to 4.20 indicates high competence/compliance; and 4.21 to 5.00 means very high competence/compliance".

2.5. Data collection procedure

After securing permission from the College of Nursing and Institutional Review Board Approval (IRBA) of the Christian University of Thailand. An explanation of the study's purpose and procedure to the nursing students was given through informed consent. Afterward, the respondents answered the self-reported questionnaire (SAQ) for 10-15 minutes. Data were collected from November 2017 to March 2018. Data organization, tabulation and statistical treatment ensued thereafter.

2.6. Data analysis

The results were analyzed using IBM Software Packages for Social Sciences (SPSS) version 5.0. Here, the following statistical formulas were utilized: frequency (n), percentage (%), weighted mean (\bar{x}), standard deviation (SD) for descriptive statistics. Pearson's product-moment correlation (r) for inferential statistics is used to test the significant relationship between student nurses' leadership and management competencies, and their level of performance using key performance indicators (KPIs) for patient safety outcomes.

3. Results

Based on the data analysis performed (Table 1), with a total of 450 respondents, it was found out that most of the Thai student nurse respondents were female (n=412 or 91.6%), from Third Year level (n=263 or 58.4%), and lastly were enrolled in International Nursing Program (n=232 or 51.6%). Table 2 shows Thai student nurses' self-perceived leadership and management competencies.

Table 1: Demographic profile of rural health unit nurse respondents

Demographic Profile	F	%
Gender		
Male	38	8.4%
Female	412	91.6%
Year Level		
Third	263	58.4%
Fourth	187	41.6%
Bachelor of Science Nursing Program		
International Program	232	51.6%
Thai Program	218	48.4%
OVERALL MEAN	450	100.0%

Table 2: Thai student nurses' self-perceived leadership and management competencies

Leadership and Management Competencies	Mean Score	SD	Verbal Interpretation
1. Leadership Skills	3.24	0.64	Competent
2. Quality Improvement	3.19	0.64	Competent
3. Teamwork	3.29	0.64	Competent
4. Resource Utilization	3.21	0.71	Competent
OVERALL MEAN	3.23	0.66	Competent

1.00-1.60 Very incompetent; 1.61-2.20 Incompetent; 2.21-2.80 moderately incompetent; 2.81-3.40 Competent; and 3.41-4.00 Very competent; SD- Standard deviation

Overall, the result of this study indicated that most of the Thai student nurses perceived they were competent ($\bar{x}=3.23$, $SD\pm 0.66$) in performing leadership and management functions. Specifically, the majority of the Thai student nurses perceived they were "competent" in performing the leadership and management competencies in terms of teamwork ($\bar{x}=3.29$, $SD\pm 0.64$), leadership skills ($\bar{x}=3.64$, $SD\pm 0.10$), quality improvement ($\bar{x}=3.19$, $SD\pm 0.64$), and resource utilization skills ($\bar{x}=3.21$, $SD\pm 0.71$). Table 3 shows the Thai Student Nurses' Perceived Level of Compliance to Key Performance Indicators (KPIs) for Patient Safety Outcomes.

Table 3: Thai student nurses' perceived level of compliance to key performance indicators (KPIs) for patient safety outcomes

Key Performance Indicators (KPIs) for Patient Safety Outcomes	Mean	SD	Level of Compliance
1. Medication Safety	2.69	0.95	Moderate
2. Infection Control	2.64	1.04	Moderate
3. Pressure Ulcer Prevention	2.57	1.03	Moderate
4. Fall Prevention	2.36	1.01	Moderate
5. Blood Management	2.83	0.79	High
OVERALL MEAN	2.62	0.96	Moderate

1.00-1.60 Very Low Compliance; 1.61-2.20 Low Compliance; 2.21-2.80 moderate compliance; 2.81-3.40 High Compliance; and 3.41-4.00 Very High Compliance; SD- Standard deviation

The findings of the study indicated that most of the Thai student nurses perceived that they demonstrated a moderate level of compliance

($\bar{x}=2.62$, $SD\pm 0.96$) to key performance indicators (KPIs) for patient safety outcomes. Specifically, the majority of Thai student nurses perceived that they demonstrated moderate compliance in medication safety ($\bar{x}=2.69$, $SD\pm 0.95$), infection control ($\bar{x}=2.64$, $SD\pm 1.04$), pressure ulcer prevention ($\bar{x}=2.57$, $SD\pm 1.03$), and fall prevention ($\bar{x}=2.36$, $SD\pm 1.01$). On the other hand, student nurses demonstrated high compliance with regards to blood management ($\bar{x}=2.83$, $SD\pm 0.79$) among the five patient safety outcomes. Table 4 shows the Correlation between Leadership and Management Competencies and Key Performance Indicators (KPIs) for Patient Safety Outcomes.

Table 4: Correlation between leadership and management competencies and key performance indicators (KPIs) for Patient Safety Outcomes

	Leadership and Management Competencies	Key Performance Indicators (KPIs) for Patient Safety Outcomes
Leadership and Management Competencies	1	0.96**
Key Performance Indicators (KPIs) for Patient Safety Outcomes	0.96**	1

**Correlation is statistically significant at 0.01 level (2-tailed)

This study aimed to test the significant relationship between leadership and management competencies and compliance with patient safety outcomes among Thai student nurses. Pearson Product Moment Correlation Coefficient (r) revealed a relatively high positive correlation between leadership and management competencies and key performance indicators (KPIs) for patient safety outcomes among Thai student nurses ($r=0.96$; $p<0.001$).

4. Discussion

The majority of Thai student nurses perceived that they are competent in performing their leadership and management functions. Based on the findings of this study, it was revealed that Thai student nurses demonstrated and always performed nursing leadership and management competencies during their clinical practicum in affiliated hospitals. Specifically, Thai student nurses were competent in performing leadership skills, quality improvement, teamwork, and resource utilization skills. These findings are consistent with those of other studies in Thailand, Ireland, America, and South Korea. Accordingly, final year Thailand student nurses from private nursing universities conveyed a superior level of nursing competency (Sawaengdee et al., 2016).

A study in East Carolina stated that the majority of participants considered leadership education in the undergraduate baccalaureate nursing programs as insufficient to meet the nursing discipline's needs; however, applied leadership tasks were rated as highly important to nursing among pre-licensure

baccalaureate student nurses (Miles, 2015). Furthermore, most of the participants perceived the need for an initiative to address the importance of nursing leadership education at the national level. This finding supports that of the study in Ireland which believed that baccalaureate nursing students were significantly more prepared to practice nursing leadership and management skills as a result of their nursing program. Also, the mean of the baccalaureate degree group was significantly high ($\bar{x}=4.89$, $SD=0.75$) in terms of exhibiting nursing leadership and management skills (Curtis et al., 2011).

Lastly, research findings suggested that undergraduate baccalaureate nursing education in Minnesota is influenced by active learning and clinical placements which provide clinical experience to student nurses, and assists them in developing nursing leadership skills and nursing management competencies (James, 2017). In contrary, this finding of the study was inconsistent with those of studies in Illinois and Phoenix which stated that student nurses with a Bachelor of Science in Nursing (BSN) programs rated themselves to be lowest in five of the six subscales which include leadership competency (Klein and Fowles, 2009). Furthermore, it was even cited that there was a lack of nursing leadership skills among student nurses in California (Abbott et al., 2012). Thus, additional leadership education is needed and recommended among nursing students. In general, leadership and management competencies are important and required skills needed by nursing students (Cho and Choi, 2018).

Most of the Thai student nurses perceived that they demonstrated a moderate level of performance of key performance indicators (KPIs) for patient safety outcomes. This implied that Thai student nurses sometimes comply with patient safety outcomes in terms of medication safety, infection control, pressure ulcer, fall prevention, and blood management. The findings of the study regarding "moderate level of performance to key performance indicators (KPIs) for patient safety outcomes among Thai student nurses" was not supported by those of previous studies in Malaysia, South Korea, Africa, Canada, United States, and the United Kingdom. A study in Michigan revealed that there is a significant improvement in student nurses' medication administration skills (Harris et al., 2014). Furthermore, a study even cited that a statistically significant improvement in knowledge and performance in medication administration were observed among nursing students in Malaysia (Guntalib, 2015). On the other hand, the majority of respondents (31.5%) reported that they made medication errors as pre-licensure students in Canada (Harding and Petrick, 2008). It was also noted that during clinical evaluations of the medication administration process, Minnesota nursing students demonstrated deficiencies in their medication administration skills (Simones et al., 2014).

In addition, a study stated that nursing students in South Korea were reported to have poor practice in infection prevention and control (Choi and Kim, 2018). Lastly, one study has cited that African nursing students in the Western Cape needed a thoroughgoing knowledge of infection control techniques before having patient contact. Thus, thorough infection control measures should be emphasized, demonstrated, and implemented by nursing students in each clinical area (Rahiman et al., 2018). Thus, the need to develop competencies among nursing students in complying with patient safety outcomes (in terms of medication safety, infection control, pressure ulcer, fall prevention, and blood management) must be emphasized.

The results indicated that leadership and management competencies among student nurses were significantly related to key performance indicators (KPIs) for patient safety outcomes. The study findings displayed a strong positively high correlation between nursing leadership and management competencies and key performance indicators (KPIs) of patient safety outcomes. Meaning to say, high nursing leadership and management competencies among student nurses leads to favorable patient safety outcomes. The majority of previous studies in the United States, the United Kingdom, Canada, Sweden, South Korea, and the Philippines support the findings of this study. Accordingly, the certain study states that nurses across nursing units in Maryland influenced patient safety culture perceptions. Thus, nurses need to play a positive role in improving patient safety outcomes and nursing performance (Ford et al., 2016). Furthermore, it was concluded that student nurses' behavior was highly associated with a higher rating of patient safety culture and practices in Iran (Farokhzadian et al., 2018). In a similar study, it was revealed that higher ratings of patient safety culture in Canada were significantly related to better nursing care processes (Macdonald et al., 2013). This study's finding is also consistent with the findings in Sweden which concluded that safety nursing practices policies were positively associated with the reduction of medical errors and an increase in the quality of care for patients. A study in Florida even noted that acute care hospitals with higher levels of nurse staffing were more likely to utilize patient safety practices. Thus, the result of this study indicated that a stronger safety culture is significantly related to better nurse outcomes (Thornlow and Merwin, 2009). Another study in the United Kingdom also measured the nursing competency and patient outcomes in the acute care setting and revealed that there was a strong link between nurse competency and patient outcomes in managing patient care. Thus, the patient-specific outcome was significantly related to the following areas of competency: Nursing diagnoses, managing patient care, and communication (Griffiths et al., 2016). Furthermore, nursing competence potentially affects the delivery of safe and quality nursing care to patients in South Korea (Jang and Lee, 2017).

Another similar study concluded that nurse staffing variables were significantly related to nurse-sensitive patient outcomes in selected hospitals in Utah (Merrill, 2011). Lastly, study findings revealed that there is a significant relationship ($r=0.953$; $p<0.001$) between clinical competencies and compliance with patient safety outcomes among nurses (Mejia et al., 2019c). Thus, the need to develop nursing leadership and management competencies among Baccalaureate nursing students must be strengthened in nursing schools to ensure the delivery of safe and quality nursing care to patients in the clinical placement settings.

5. Conclusion

This study concluded that most of the Thai student nurses always demonstrated nursing leadership and management competencies, and sometimes complied with key performance indicators (KPIs) for patient safety outcomes during their clinical practicum in the affiliated hospitals. Furthermore, the study concluded that there was a significant relationship between student nurses' leadership and management competencies and key performance indicators (KPIs) for patient safety outcomes.

6. Recommendation

Therefore, nursing schools and colleges must provide advanced training, workshops, clinical placements, and education relevant to nursing leadership and management to student nurses to improve their competencies and assist them in preparing for future nursing leadership roles in the hospitals. The implications of this study can enable nurse educators to (1) optimize student learning regarding patient safety, and (2) ensure patients' safety under the care of pre-licensure student nurses. These implications can encourage the development of a patient safety course in the nursing curriculum that enables nurse educators to emphasize the importance of patient safety processes, safety protocols, risk management, and medical error prevention. Thus, such improvement will promote better patient outcomes among student nurses during their clinical placements in hospital facilities as part of their nursing education.

Acknowledgment

Special appreciation to all the nursing students from both the Thai and International Nursing Program of the Christian University of Thailand who participated in the study.

Funding

Research funding was provided by the Christian University of Thailand with a reference code number of 15/2560.

Compliance with ethical standards

Informed consent

An informed consent was secured from all student nurses who participated in the study.

Conflict of interest

The authors declare that they have no conflict of interest.

References

- Abbott AA, Fuji KT, Galt KA, and Paschal KA (2012). How baccalaureate nursing students value an interprofessional patient safety course for professional development. *ISRN Nursing*, 2012: 401358.
<https://doi.org/10.5402/2012/401358>
PMid:22523700 PMCID:PMC3316946
- ACSQHC (2017). Entity resources and planned performance. Australian Commission on Safety and Quality in Health Care, Darlinghurst, Australia.
- Berman A and Snyder S (2012). *Kozier and Erb's fundamentals of nursing: Concepts, process and practice*. 9th Edition, Pearson Education, London, UK.
- Chenot TM and Daniel LG (2010). Frameworks for patient safety in the nursing curriculum. *Journal of Nursing Education*, 49(10): 559-568.
<https://doi.org/10.3928/01484834-20100730-02>
PMid:20669876
- Cho SM and Choi J (2018). Patient safety culture associated with patient safety competencies among registered nurses. *Journal of Nursing Scholarship*, 50(5): 549-557.
<https://doi.org/10.1111/jnu.12413> **PMid:30009449**
- Choi JS and Kim KM (2018). Infection-control knowledge, attitude, practice, and risk perception of occupational exposure to Zika virus among nursing students in Korea: A cross-sectional survey. *Journal of Infection and Public Health*, 11(6): 840-844.
<https://doi.org/10.1016/j.jiph.2018.07.002> **PMid:30049612**
- Crowther A (2004). *Nurse managers: A guide to practice*. 1st Edition, Ausmed Publications, New York, USA.
- Curtis EA, Sheerin FK, and Vries JD (2011). Developing leadership in nursing: The impact of education and training. *British Journal of Nursing*, 20(6): 344-352.
<https://doi.org/10.12968/bjon.2011.20.6.344>
PMid:21471889
- Drake DJ (2015). *Nurse leader behavior and patient safety*. Ph.D. Dissertation, East Carolina University, Greenville, USA.
- Farokhzadian J, Nayeri ND, and Borhani F (2018). The long way ahead to achieve an effective patient safety culture: Challenges perceived by nurses. *BMC Health Services Research*, 18: 654.
<https://doi.org/10.1186/s12913-018-3467-1>
PMid:30134980 PMCID:PMC6106875
- Feliciano AZ, Feliciano EE, Mejia PC, Boshra AY, Feliciano JR, Osman A, Malabanan, MC, Alsharyah H, Hussein Y, Sadang JM, and Maila NM (2019b). Exploring the practices employed by nurses in stethoscope care. *International Journal of Allied Medical Sciences and Clinical Research*, 7(2): 385-395.
- Feliciano EE, Boshra AY, Mejia PCG, Feliciano AZ, Alsharyah HM, Malabanan MC, and Osman A (2019a). Understanding Philippine nurses' competency in the delivery of healthcare services. *Journal of Patient Care*, 5: 146.
<https://doi.org/10.4172/2573-4598.1000146>
- Ford EW, Silvera GA, Kazley AS, Diana ML, and Huerta TR (2016). Assessing the relationship between patient safety culture and

- EHR strategy. *International Journal of Health Care Quality Assurance*, 29(6): 614-627.
<https://doi.org/10.1108/IJHCQA-10-2015-0125>
PMid:27298060
- Griffiths P, Ball J, Drennan J, Dall'Ora C, Jones J, Maruotti A, Pope C, Saucedo AR, and Simon M (2016). Nurse staffing and patient outcomes: Strengths and limitations of the evidence to inform policy and practice: A review and discussion paper based on evidence reviewed for the national institute for health and care excellence safe staffing guideline development. *International Journal of Nursing Studies*, 63: 213-225.
<https://doi.org/10.1016/j.ijnurstu.2016.03.012>
PMid:27130150
- Guntalib NL (2015). Effect of a simulation course on medication administration safety of Malaysian nursing students. Ph.D. Dissertation, Loma Linda University, Loma Linda, USA.
- Harding L and Petrick T (2008). Nursing student medication errors: A retrospective review. *Journal of Nursing Education*, 47(1): 43-47.
<https://doi.org/10.3928/01484834-20080101-05>
PMid:18232615
- Harris MA, Pittiglio L, Newton SE, and Moore G (2014). Using simulation to improve the medication administration skills of undergraduate nursing students. *Nursing Education Perspectives*, 35(1): 26-29.
<https://doi.org/10.5480/11-552.1> **PMid:24716338**
- James SV (2017). Exploring leadership pedagogy among Louisiana baccalaureate nursing programs. Ph.D. Dissertation, Walden University, Minneapolis, USA.
- Jang H and Lee NJ (2017). Patient safety competency and educational needs of nursing educators in South Korea. *PLoS ONE*, 12(9): e0183536.
<https://doi.org/10.1371/journal.pone.0183536>
PMid:28873099 PMCID:PMC5584796
- Klein CJ and Fowles ER (2009). An investigation of nursing competency and the competency outcomes performance assessment curricular approach: Senior student's self-reported perceptions. *Journal of Professional Nursing*, 25(2): 109-121.
<https://doi.org/10.1016/j.profnurs.2008.08.006>
PMid:19306834
- Kohn LT, Corrigan J, and Donaldson MS (2000). *To err is human: Building a safer health system* (Vol. 6). National Academy Press, Washington, DC, USA.
- Lin LM, Wu JH, and White LP (2005). Managerial activities and skills of nurse managers: An exploratory study. *Hospital Topics*, 83(2): 2-9.
<https://doi.org/10.3200/HTPS.83.2.2-9> **PMid:16190515**
- Lin LM, Wu JH, Ing-Chung H, and Kuo-Hung T (2007). Management development: A study of nurse managerial activities and skills. *Journal of Healthcare Management*, 52(3): 156-168.
<https://doi.org/10.1097/00115514-200705000-00006>
- Lunberg PC and Boonprasabhai K (2002). Meanings of good nursing care among Thai female last-year undergraduate nursing students. *Journal of Advanced Nursing*, 34(1): 35-42.
<https://doi.org/10.1046/j.1365-2648.2001.3411738.x>
PMid:11430604
- Macdonald MT, Lang A, Storch J, Stevenson L, Barber T, Iaboni K, and Donaldson S (2013). Examining markers of safety in homecare using the international classification for patient safety. *BMC Health Services Research*, 13: 191.
<https://doi.org/10.1186/1472-6963-13-191>
PMid:23705841 PMCID:PMC3669614
- Mejia PC, Feliciano EE, Feliciano AZ, Sadang JM, Pangandaman HK, Garcia LL, Al-Noaemi MC, Abdelhafiz IM, Breboneria BL, ElRazkey JY, Albougami A, and Lorica JD (2019a). The effectiveness of health education and lifestyle program in improving the blood pressure of hypertensive patients. *International Journal of Advanced and Applied Sciences*, 6(11): 21-29.
<https://doi.org/10.21833/ijaas.2019.11.004>
- Mejia PC, Feliciano EE, Hussein MK, Boshra AY, Feliciano AZ, Malabanan MC, Alsharyah H, Osman A, Abdalla Y, Arambulo DD, Gonzales FM, and Yngente AKN (2019b). Synopsis of critically appraised literature on palliative nursing care. *International Journal of Africa Nursing Sciences*.
<https://doi.org/10.1016/j.ijans.2019.100152>
- Mejia PG, Osman A, Yngente AK, and Feliciano E (2019c). The relationship between professional nursing competencies and key performance indicators (KPIs) for patient safety outcomes among Filipino staff nurses in selected private secondary hospitals in the Philippines. *European Journal of Pharmaceutical and Medical Research*, 6(1): 404-409.
- Merrill KC (2011). The relationship among nurse manager leadership style, span of control, staff nurse practice environment, safety climate, and nurse-sensitive patient outcomes. Ph.D. Dissertation, The University of Utah, Salt Lake City, USA.
- Miles JM (2015). Toward increasing leadership capacity in nurses: An exploration of the state and future perspectives of leadership education in pre-licensure baccalaureate nursing programs. Ph.D. Dissertation, East Carolina University, Greenville, USA.
- Rahiman F, Chikte U, and Hughes GD (2018). Nursing students' knowledge, attitude and practices of infection prevention and control guidelines at a tertiary institution in the Western Cape: A cross sectional study. *Nurse Education Today*, 69: 20-25.
<https://doi.org/10.1016/j.nedt.2018.06.021> **PMid:30007142**
- Raymond J, Medves J, and Godfrey C (2016). Perspectives on patient safety among practical nursing students. *Canadian Journal of Nursing Research*, 48(2): 41-47.
<https://doi.org/10.1177/0844562116664260>
PMid:28841041
- Sadang JM, Mala ND, Mejia PC, Mejia G, Osman A, Feliciano EE, ElRazky JY, Gonzales FM, and Tachavijitjaru C (2019). Nurses preparedness of rural health unit nurses in responding to patients of suspected sexually transmitted infections in Lanao del Sur Province, Philippines. *International Journal of Advanced and Applied Sciences*, 6(9): 31-37.
<https://doi.org/10.21833/ijaas.2019.09.005>
- Sawaengdee K, Kantamaturapoj K, Seneerattanaprayul P, Putthasri W, and Suphanchaimat R (2016). Self-assessment of nursing competency among final year nursing students in Thailand: A comparison between public and private nursing institutions. *Advances in Medical Education and Practice*, 7: 475-482.
<https://doi.org/10.2147/AMEP.S111026>
PMid:27563265 PMCID:PMC4984689
- Simones J, Odland DN, Schug V, Blazovich LM, Pivec C, and Daniels J (2014). Student nurses' thinking during medication administration. *Journal of Nursing Education and Practice*, 4(11): 136-146.
<https://doi.org/10.5430/jnep.v4n11p136>
- Sloane DM, Smith HL, McHugh MD, and Aiken LH (2018). Effect of changes in hospital nursing resources on improvement in patient safety and quality of care: A panel study. *Medical Care*, 56(12): 1001-1008.
<https://doi.org/10.1097/MLR.0000000000001002>
PMid:30363019 PMCID:PMC6231998
- Stock GN, McFadden KL, and Gowen CR (2010). Organizational culture, knowledge management, and patient safety in United States hospitals. *Quality Management Journal*, 17(2): 7-26.
<https://doi.org/10.1080/10686967.2010.11918267>
- Sullivan EJ (2012). *Effective leadership and management in nursing*. 8th Edition, Pearson Education, London, UK.
- Thomas KS (2011). Patient safety in nursing homes. Ph.D. Dissertation, University of South Florida, Tampa, USA.

Thornlow DK and Merwin E (2009). Managing to improve quality: The relationship between accreditation standards, safety practices, and patient outcomes. *Health Care Management Review*, 34(3): 262-272.
<https://doi.org/10.1097/HMR.0b013e3181a16bce>
PMid:19625831

Tomey AM (2009). *Guide to nursing management and leadership*. 8th Edition, Mosby, Maryland Heights, USA.

Towle A (2015). Learning to lead: Teaching the millennial nursing student leadership skills in a short-term immersion study abroad program. *International Journal of Nursing and Clinical Practices*, 2: 160.
<https://doi.org/10.15344/2394-4978/2015/160>