



Nursing Leadership Models in Promoting and Improving Patient's Safety Culture in Healthcare Facilities; A Systematic Review

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ABSTRACT

Background: Nurse leader has an important role in encouraging patient's safety culture among nurses in the healthcare system. This literature review aims to identify the nursing leadership model and to promote and improve patient safety culture to improve patient outcomes in health care facilities including hospitals, primary health care, and nursing home settings.

Methods: Searching appropriate journals through some journal databases were applied including DOAJ, GARUDA, Google Scholar, MDPI, Proquest, Pubmed, Sage Journals, ScienceDirect, and Wiley Online Library, which were published from 2015 to 2020.

Results: Fourteen articles meet the criteria and are included in this review. The majority of these articles were retrieved from western countries, the US, Canada, and Finland. This review identifies three nursing leadership models that seem useful to promote and improve patient safety culture in health care facilities which are transformational, authentic, and ethical leadership models.

Conclusion: The patient safety influences health care outcomes. The evidence shows the leadership has positive relation to patient satisfaction and patient safety outcomes improvement. The transformational, authentic, and ethical leadership models seem to be more useful in promoting, maintaining, and improving patient safety culture in health care facilities.

Key words: Leadership, Nurses, Patient safety, Patients satisfaction, Safety management

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Introduction

Patient safety is one of the essential components for providing quality healthcare services (1) without generating negative consequences for individuals under the care of multi professionals (2). Recently, patient safety is compulsory in all health care service facilities such as hospitals, primary health care, and nursing homes. The majority of these health care facilities attempt to enhance quality care services that have been increased since the patient safety culture became an essential issue in the health care system (3).

Patient safety is defined as abstention of harm or adverse event on patients during the health care process (4). However, several scholars stated that assessing and identifying potential causes or factors of unexpected events and making health care services safe is complicated. Failure in the health care organization system brings a negative impact on safety issues because most adverse events are affected by the failure of the system (5). Further, to solve and improve patient safety, putting patient safety as a high priority in organizational culture is necessary. For these reasons, organizations should regularly assess and improve patient safety culture and transparency within the organization. Besides, effective leadership is crucial in providing this service (6). However, one study found that nurses' patient safety culture scores are low (7). In contrast, many studies discovered that leadership has a positive correlation on the safety behavior of health professionals (8).

Leadership is one of the major patient safety culture predictors (9), and safe health care services have become a focus of leaders at all levels within the health care system (10). Although limited research has been conducted on the impact of nursing leadership on patient safety (11), the nurses' role was identified as essential to maintain high-quality services in health care facilities such as keeping patients safe (12). Also, nurses provide better safe services than other health professionals. It was indicated that nurses' roles are pivotal in patient safety reassurance. It is acknowledged that nurses are more likely to

interfere and correct potentially adverse and unexpected events with patients (13).

Although the nurses' responsibility in maintaining safety for patients is often neglected (14), the review reported that nurse leaders contribute in modifying the environment to provide safety for patients, and to avoid unexpected events (12). Furthermore, to facilitate the provision of safe care, the nurse leaders should improve nurses' working environments, develop the nurses' practical capabilities, regularly evaluate nurses' capabilities, conduct appropriate supervision, and empower and reward nurses' safe practice (11, 15). Therefore, better capabilities and qualifications are needed. Moreover, a nurse leader has the responsibility to ensure that all nurses have adequate knowledge and skills in patient safety prevention to enhance patient safety practices in a clinical setting (4).

Besides, nurse leaders also have responsibilities to engage other health professionals to promote patient safety (15). An Iranian study found that most nurses pointed out that nurse leaders should facilitate warranty safety care, provide adequate numbers of nurses on duty, provide facilities, and equipment as environmental prerequisites. One of the strategies to accelerate patient safety progression in health care services is engaging the leaders' role to create a patient safety culture, reorganizing and coordinating efforts, and developing consequential outcome metrics (16). Also, changes will only occur when leaders are intended to promote a patient safety culture.

It was perfectly understood that one of five factors that influence the sustainability of health-related change programs such as patient safety culture and safety climate is considered as leadership (17). Besides, involving both leaders and all health care professionals is a pivotal factor for success to sustain the safety culture. Thus, leadership is essential in all levels of organizational structures and all settings. Considering the important role of nurse leaders in patient safety culture, identification of leadership models is needed to improve patients' outcomes.



Materials and Methods

This review used the PRISMA statement to describe the nursing leadership model in patient safety culture in health care facilities.

Eligibility criteria

This review summarized scientific papers through some journal databases namely DOAJ, GARUDA (Indonesian Journal database), Google Scholar, MDPI, Proquest, Pubmed, Sage Journals, ScienceDirect, and Wiley Online Library. Studies indexed from 2015 to 2020 and related to patient safety culture. English keywords used are patient safety, patient safety culture, patient safety climate, safety climate, leadership model, leadership type, leadership style, clinical leadership, leadership, nursing leadership, nurse leader, and clinical nurse leader. Extracted articles by applying PRISMA method analysis (see Figure 1) are as follows:

- Identification

It is identified that 197 articles were found on DOAJ, GARUDA, Google Scholar, MDPI, Proquest, Pubmed, Sage Journals, ScienceDirect, and Wiley Online Library journal databases.

- Screening

There are 164 retrieved after removing the articles' duplication (n = 33).

- Eligibility

Articles included in this study should meet inclusion criteria such as articles written in English and after 2015, the article focus on leadership of nurse, nurse leader, patient safety culture, and are original articles, theses, dissertations, and systematic review articles. The articles are excluded for several reasons such as title review and abstract (n = 34), not related to the scope of this study (n = 15), not academic journals such as review journal, letter to the editor, short communication, case report, and commentary (n = 36), inappropriate population such as medical students, nursing students, physician, and physiotherapist (n = 27), not full text (abstract only) (n = 38).

- Included

Articles are included in this study should meet all inclusion criteria mentioned above and the result found that there are 14 articles. The details of the selection process are as follows (see Table 1):

Table 1. Articles selection

Identification	DOAJ, GARUDA, Google Scholar, MDPI, Proquest, Pubmed, Sage Journals, ScienceDirect, and Wiley Online Library (n = 197)	
Screening	164	Articles' duplication (n = 33) Articles excluded (n = 150) <ul style="list-style-type: none"> • Title review and abstract (n = 34) • Not related to the scope of this study (n = 15) • Not academic articles such as review journal, letter to the editor, short communication, case report, and commentary (n = 36)
Eligibility	14	<ul style="list-style-type: none"> • Inappropriate population such as medical students, chief medical officer, head of the hospital, technical vice-director, nursing students, physician, pharmacist, clinical social worker, and physiotherapist (n = 27) • Not full text/abstract only (n = 38)
Included	14	Articles that met criteria (n = 14)

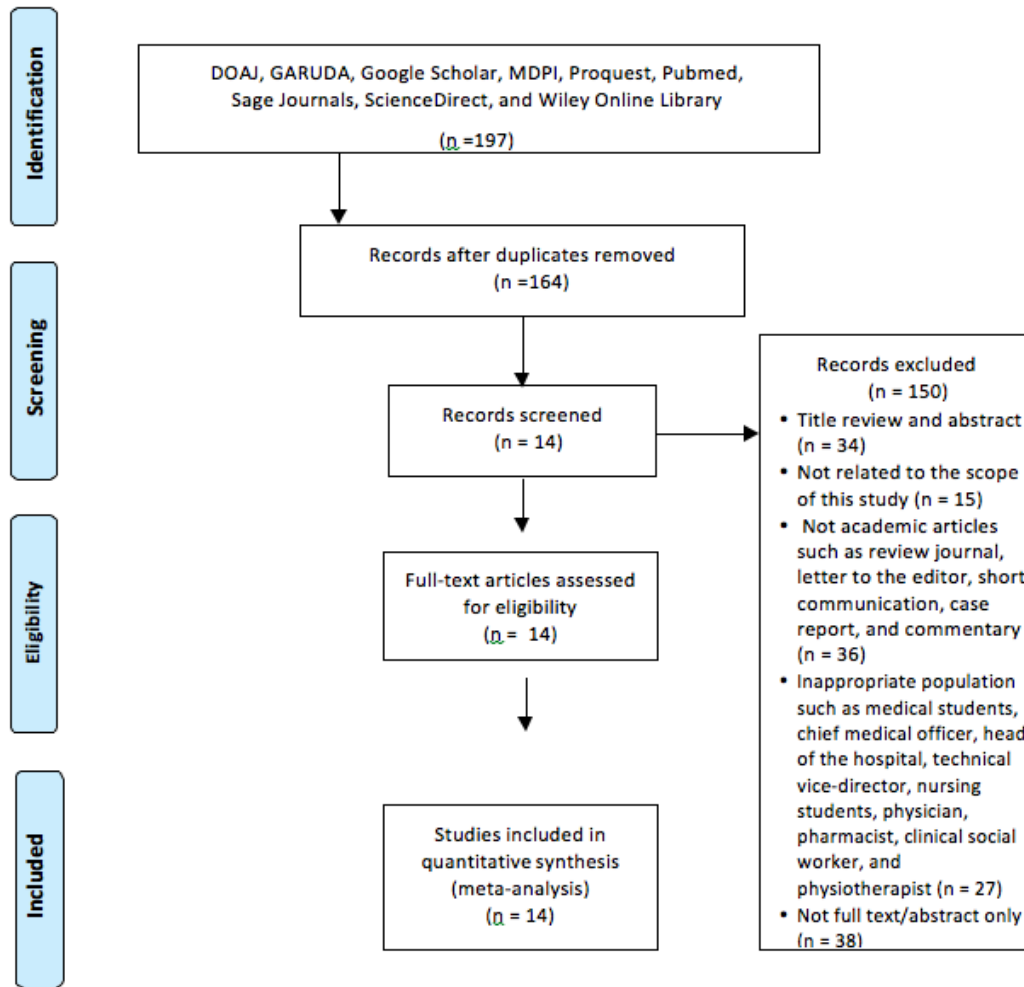


Figure 1. PRISMA Diagram

Results

In this review, there are 14 articles (see Table 2) that are selected, and all of these will be described into the setting, design of the study, participants, and the leadership nursing models. Most of the studies included in this study were conducted in the US, Canada, and Finland.

Setting of studies

The majority of study was conducted in North America such as the US (n = 3), Canada (n = 2), and Europe such as Finland (n = 2) and Germany (n = 1), while the rest was conducted in Asian countries such as Iran (n = 1), Korea (n = 1), Pakistan (n = 1), Saudi Arabia (n = 1), Taiwan (n = 1) and Turkey (n = 1). These studies were conducted in different types of hospitals including

teaching hospitals, referral hospitals, and regional hospitals.

Design of the studies

All articles selected are quantitative methods in which the majority of scholars used cross-sectional study, which counted for 7 studies, while descriptive correlational, survey, predictive, and qualitative studies were the rest.

Participants of the studies

The studies have shown various numbers of participants who were ranging from 153 to 1,735 in quantitative design while 11 nurse managers were selected as participants in a qualitative study, and total respondents from all studies were counted as 5,778. Nurses recruited in these studies have various roles such as nurse managers, front line



nurses, head nurses, senior charge nurses or senior sister, and senior nurse and midwifery.

Leadership nursing models in promoting and maintaining of patient safety culture

There are three leadership models identified that may suit to apply to promote and improve patient safety culture in health care service facilities transformational leadership, authentic leadership, and ethical leadership models. The majority of articles cited focus on transformational leadership and patient safety culture (12 studies), while the rest focus on authentic leadership (1 study) and ethical leadership (1 study).

Transformational leadership

Transformative leadership (TL) is also known as participative leadership. A study conducted in Taiwan found that the TL seems more likely to be adopted by Taiwan nurse leaders than transactional leadership (18). Furthermore, there is a strong positive and direct connection between TL and innovative work behavior of patient safety climate and innovation climate and the fact that TL has a positive influence on patient safety. Since TL focuses on followers and problem-solving ability in a changing environment, it seems to be an appropriate model for improving patient safety in health care facilities (18). Besides, some elements of the TL also found are visible in nursing managers' in the handling of the adverse event by encouraging nurse staff to talk about adverse events (19). Another study investigated three leadership styles, namely transformational, transactional, and laissez-faire by using a multifactorial leadership questionnaire. The results of that study found that TL seems more likely to contribute and improve the safety climate in health care services both in critical and non-critical departments (20). Moreover, TL will improve patient safety climate in the workplace when the hospital leaders applied this leadership style because this is directly related to health professionals' perception of a strong safety climate (21). Additionally, a study conducted in Middle East countries reported that TL has shown a positive impact on patient safety improvement, and positively affects the organizational climate within

the organization (22). In contrast, the Higgins study result discovered that TL has indicated an indirect effect on medication errors and hospital-acquired infections (23). However, in conclusion, Higgins mentioned that the mediating variables such as supportive practice environments, organizational citizenship behaviors, patient safety culture, and nurse job satisfaction might strengthen the TL on patients' falls, medication errors, and hospital-acquired infections reduction. Similar findings were found by Kim, Seok, and Kim revealing that the TL is expected to improve the perceived benefits of system use and enhance a positive view of the medication error management climate (24). Additionally, Canadian scholars reported that the TL shows potential to lead high quality of care (25), and also can influence the structural empowerment and job satisfaction (26). Safety climate within the team has influenced by the TL, and that has a direct positive relationship (27). Although the relationship between the TL and medication safety was moderate, however statistically shows the correlation in significant (28), and another study reported that the TL also effective to reduce incidence of adverse patient outcomes (29).

Authentic leadership

A study conducted in Turkey investigated perceptions of nurses on the authentic leadership (AL) and safety climate, and whether the AL could predict the safety climate (30). The study results show that the AL has significantly and positively relation to safety climate. To analyze how well the AL predicts safety climate, hierarchical regression was used and the result concludes that the overall model of the AL significantly predicts and explained the variance of safety climate. Further, the Turkey scholars found out that safety climate perceptions increase as the AL perceptions increase (30).

Ethical leadership

Iranian scholars examine nurses' viewpoint on the relation of Ethical Leadership (EL) to nurses' organizational commitment (OC) and PSC (31). There were 340 nurses involved in that study and recruited from some hospitals as a representative hospital from each region in Teheran. The study



reported that the EL of nursing managers has a significantly positive relation to nurses' perception on PSC, and OC. Furthermore, the regression analysis showed that the EL and OC were precisely predictors of PSC and that confirms the relationship between the variables. Regarding the

relationship between the nurses' safety performance, the EL, and OC, it justifies that the optimization of organizational commitment and adherence to ethical leadership by leaders or managers could enhance nurses' performance on patient safety-related practices (31).

Table 2. Articles meet all the inclusion criteria

Authors and Year	The setting of the study	Objectives	Design of study	Participants	Outcomes /Results
Weng, Huang, Chen, and Chang, 2015. [18]	Taiwan	To explore the effect of TL on nurse innovation behavior and organizational climate.	A cross-sectional study	439 frontline nurses from three regional hospitals.	The TL improves innovation behavior among nurses, and that mediated by patient safety climate and organizational climate.
Liukka et al., 2018 [19]	Finland	To discover the impact of the TL on adverse events.	A qualitative design	11 nurses managers	The TL improves the visibility of nurse managers in controlling adverse events.
Merrill, 2015 [20]	Utah, US	To investigate the correation of nurse manager (NM) leadership style and safety climate.	A descriptive correlational study	466 staff nurses from 41 nursing departments across 9 hospitals.	The TL contributes to safety climate, while the laissez-faire leadership contributes to a blaming culture.
McFadden, Stock, and Gowen III, 2015 [21]	US	To discover the TL, safety climate, and continuous quality improvement on patient safety.	A survey study	204 hospitals and a response rate of 33 %.	The TL has linked to safety climate, and patient safety outcomes improvement.
Alotoibi et al., 2015 [22]	Saudi Arabia	To investigate the relationship between TL and perceived patient safety as a mediation effect of organizational climate from the nurses' perspective.	A quantitative research design	217 out of 254 participants were serviceable for analysis	The organizational climate and patient safety were strongly influenced by the TL. The leadersip model shows potential to improve organizational climate.
Higgins, 2015 [23]	US	To evaluate the effectiveness of leadership in promoting a patient safety culture.	A predictive non-experimental design	1735 of nurses from seven hospitals	The TL with supportive practice environment effective in patient falls, medication errors, and hospital-acquired infections reduction.
Kim, Seok, Kim, 2020 [24]	Korea	To analyse the relationship between TL and the medication-error management climate thorough a medication safety system.	A cross-sectional descriptive design	153 nurses from 11 hospitals (secondary and tertiary hospitals)	The TL has a strong correlation to medication-error management climate.



Authors and Year	The setting of the study	Objectives	Design of study	Participants	Outcomes /Results
Lavoie-Tremblay et al., 2016 [25]	Canada	To identify the differences of transformational and abusive leadership models implementation on novice nurses	A cross-sectional study	541 nurses from Quebec province.	The TL shows potential to lead high-quality care.
Asif et al., 2019 [26]	Pakistan	To investigate the TL, structural empowerment, job satisfaction, and nurse-assessed adverse patient outcomes (APO) on the quality of care improvement.	A cross-sectional	600 nurses working at 17 government hospitals	The TL model could reduce the adverse patient outcomes and also increase the quality of care. The TL also can influence the structural empowerment and job satisfaction
Anselmann & Mulder, 2020 [27]	Germany	To identify the relationships between the TL, safety climate, knowledge dissemination and reflection, and team performance	A cross-sectional study	32 teams and 183 team members, were 82 % female	Safety climate within the team has influenced by the TL, and that has a direct positive relationship.
Boamah et al., 2018 [28]	Canada	To explore the TL behaviors influence on job satisfaction and patient safety outcomes.	A cross-sectional survey	378 acute care nurses in Ontario	The TL brings a positive impact on workplace empowerment. The TL also can increase job satisfaction and reduce the incidence of adverse patient outcomes.
Lappalainen et al., 2020 [29]	Finland	To analyse the relationship between the TL and medication safety.	A descriptive cross-sectional study	161 registered nurses from 3 hospitals	Although the relationship between the TL and medication safety was moderate, however statistically shows the correlation in significant
Dirik & Seren Intepeler, 2017 [30]	Turkey	To investigate the effect of AL on the safety climate, and analyze nurses' perceptions about AL and safety climate.	A predictive study	350 nurses in three Turkish hospitals.	The AL was useful on the safety climate prediction. Nearly 10 % of respondents have problematic particularly on four safety climate items.
Lotfi et al., 2018 [31]	Iran	To investigate the impact of EL, and organizational commitment on nurses' perception of patient safety. culture	A descriptive–correlational study	340 nurses from the hospitals in Tehran	The EL has a strong correlation on PSC perception and organizational commitment among nurse managers.



Discussion

Recently, the involvement of leadership in all levels of organizations was crucial to succeed in the initiations of patient safety culture and sustain the long term of changes (32). Besides, leadership is also considered as one of the impactful factors on comprehensive organizational changes. Both of the health workers and processes in health care services will affect patient safety, and these elements also depend on leadership (33). Undeniably, some evidence shows that leadership style has a positive impact on patient outcomes related to patient safety (34). Additionally, leadership is already known as an important aspect of promoting and maintaining patient safety in health care service organizations, and also by which leadership influences on patient safety culture within that organization (35).

Leadership practices, safety cultures, and patient safety outcomes have interdependency between them (36). Although, in a supervisory style, TL is positively connected to employee safety climate perceptions in industrial settings (37), the organizational structure, climate, and leadership hierarchy in industrial workplaces characteristically differ with health care organizations. In this regard, leadership such as transformational has to be a significant predictor of perceived patient safety culture (38).

In terms of the transformational leadership model, the model is involved in transformative actions to improve members' perspectives and perceptions to achieve organizational goals (39). It was important for nurses to engage the TL model into clinical practice since that model identified could enhance team satisfaction among nurses and ensure a healthy working environment to improve the quality of care. Besides, it was a predictor of the nurses' intentions to stay on at their current healthcare facilities (25). The TL is played to enhance the working conditions and atmosphere, which allows the nurses to establish good relations with patients and improve the quality of care and patient satisfaction (26). A study in Brazil found that leadership is a fundamental aspect of the development of organizational changes, and that

will drive the teamwork process during the changes (40).

Another term of participative or TL is Walk-Round (WR) leadership. Although the relation between WR leadership and safety culture is limited, WR was suggested to sustain and promote patient safety (41). Besides, WR is also a strategy to engage hospital' leaders and staff-patient safety improvement (42). A study that was conducted in acute care organizations shows that walk-rounds from senior leaders in regards to patient safety are an efficient approach to improve the patient safety culture. Implementation of the participative leadership approach is Walk-Rounds and is shown by soliciting and integrating frontline staff concerns and ideas on safety issues into the decision-making processes (37). Similarly, in cross-sectional experimental studies, executive walk-rounds is effective to reduce adverse patient outcomes (43). As a result, the commitment of leaders can promote trust and psychological support for staff (42).

Transformational leaders can create a safe team climate that enhances learning and thus improves outcomes (27). The TL improves team's learning activities and also influences team's performance. Therefore, providing the learning opportunities for nurses is necessary (29). The TL model also is an important aspect in promoting medication safety and improving the nursing management. Further, as nurse manager, it should offers feedback sufficiently, and rewards nurses (28).

As a relational leadership model, the AL is grounded in the leaders' positive psychological capabilities, integrity and forthrightness, moral values, and trustworthiness (44). Although the study on AL in the health care system was limited, several studies show that the AL has been linked with work outcomes (44). The authentic leaders can generate the supporting working environment to promote quality practice and safety culture improvement, and to fewer adverse patient outcomes (44). In terms of patient outcomes, an empirical study shows the association between AL and actual or objective patient outcomes (45). Moreover, the AL was found to be a significant



predictor and linked to the safety climate. The safety climate emphasizes the capability of managers to manage the personnels and to receive thought and information from personnel at all levels. Also, nurse leaders who have characteristics such as have ethical behavior and self-awareness, and be in quest of information strongly encourage safety climate within the organization (30).

Ethical leadership (EL) has been emphasized as the personal actions and interpersonal relationships that presented in properly normative etiquette, and promotion of such etiquettes to followers through bilateral communication, strengthening, and decision-making (46). Furthermore, the introducing and developing the EL among nurse managers could minimize the error rate and escalate error reporting to enhance patient outcomes (46). Besides, EL has also been investigated in the aviation field, where 305 pilots were involved and recruited in that study. The study found that the EL has a positive and remarkable relation to safety culture, that relation was highly correlated (47). Nurse managers, who practice EL, have employees with higher organizational commitment and perceptions of patient safety culture, and it is beneficial for both the organization and individual. Implementing EL is a viable strategy to enhance nurses' organizational commitment and perceptions on PSC. Efforts of nurse managers in engaging and performing the EL and reinforcing the organizational commitment improves patient outcomes, and it was a vital aspect for having a successful result in PSC development (31).

Due to the lack of study about the role of nurse leader, and nursing leadership models on patient safety culture in health care facilities especially in developing countries, the study result may not offer appropriate nursing leadership models for patient safety culture implementation and improvement in low resources countries.

Conclusion

Providing safety care in health care facilities is necessary. To improve patient outcomes, some

nursing leadership models are beneficial in promoting and improving patient safety culture including transformational, authentic, and ethical leadership models. These leadership models have potential benefits in creating a safe team climate, supporting quality professional nursing practice, and organizational commitment which shows a strong relationship with patient safety culture improvement.

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Conflict of interests

The authors declared that there was no conflict of interests.

Authors' Contributions

Yodang Y and Nuridah N designed research; Yodang Y reviewed the literature, extracted and summarized the results; and Yodang Y and Nuridah N wrote manuscript. All authors read and approved the final manuscript.

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