



How to Cite:

Alharbi, F. A., Alshammari, A. H., Altalhi, O. H., Aldughayyim, F. S., & Alotaibi, W. M. (2024). Transformational leadership and the medication: Error management climate. *International Journal of Health Sciences*, 8(S1), 2085-2096. <https://doi.org/10.53730/ijhs.v9nS1.15558>

Transformational leadership and the medication-error management climate

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Abstract---Background: Transformational leadership is a prominent leadership style renowned for its potential to yield positive outcomes in various sectors, including healthcare, education, and academia. It has been associated with fostering staff well-being, motivation, professionalism, and retention, while simultaneously shaping organizational culture and employee behavior. **Aim:** The aim of this study is to examine the relationship between transformational leadership styles and the medication-error management environment in Saudi hospitals. **Method:** A systematic review and analysis of five studies were conducted, all of which received a "Good" quality rating.

These studies collectively investigated the relationship between transformational leadership and a range of important outcomes. Wu et al. (2020) highlighted the positive impact of transformational leadership on enhancing healthcare staff well-being. Novita et al. (2022) revealed the mediating role of work motivation in the connection between transformational leadership and teacher professionalism. Abu-Rumman (2021) underscored the significant influence of transformational leadership on human capital development in academia. Reinhardt et al. (2022) demonstrated the efficacy of transformational leadership in retaining nursing staff. Kao et al. (2023) unveiled the intricate connections between leadership, organizational climate, and employee behavior. **Result:** The collective findings from these studies consistently emphasize the positive influence of transformational leadership, spanning the promotion of staff well-being, the enhancement of motivation and professionalism, and the facilitation of staff retention. Additionally, transformational leadership significantly contributes to human capital development and plays a pivotal role in shaping organizational climate and employee behavior.

Keywords---transformational leadership, well-being, motivation, professionalism, staff retention, organizational culture, healthcare, education, academia.

Introduction

In the intricate world of healthcare, the interplay between leadership and patient safety is a matter of paramount importance (Philip et al., 2021). In this complex environment, one leadership style has emerged as exceptionally relevant: transformational leadership (Meza et al., 2021). This approach is characterized by its emphasis on inspiring teams, promoting innovative thinking, and fostering a positive work environment (Ahmed & Al Amiri, 2022). Its profound impact on medication error management warrants a closer examination, as it plays a significant role in enhancing patient safety and the overall quality of care (Philip et al., 2021).

Medication errors in healthcare can have devastating consequences, including patient harm and the escalation of healthcare costs (Wangloan et al., 2022). These errors are not confined to a specific stage of the medication process; they can occur at any point, making them a global challenge. Within the context of Saudi Arabia, the prevalence of medication errors is alarmingly high. Addressing this issue necessitates a concerted effort to improve medication safety culture and practices within healthcare institutions (Allozi et al., 2022). Central to this culture is the medication-error management climate, which is integral in encouraging healthcare providers to report and learn from errors (Molines et al., 2022). A positive climate fosters a non-punitive environment, making it more likely for healthcare professionals to disclose errors and work towards preventing their recurrence (Allozi et al., 2022).

In this context, transformational leaders play a pivotal role. They cultivate a culture of accountability, which involves instilling a strong sense of ownership within healthcare professionals (Philip et al., 2021). This approach encourages them to take responsibility for their actions, including the reporting of errors, without the fear of blame (Wangloan et al., 2022). As a result, staff members are more likely to come forward and promptly report medication errors, contributing to a culture of transparency and accountability (Lappalainen et al., 2020).

Furthermore, transformational leaders are enthusiastic advocates of continuous learning and improvement (Allozi et al., 2022). They create an environment where teams view errors as opportunities for growth and process refinement (Wangloan et al., 2022). This mindset is instrumental in identifying system flaws and actively implementing measures to prevent future errors (Philip et al., 2021). By encouraging a culture of continuous learning, transformational leaders foster an environment that is responsive to change and improvement (Allozi et al., 2022).

Additionally, transformational leaders instill a deep commitment to patient-centered care. Their leadership aligns efforts to prevent medication errors with a shared vision of patient safety and well-being. This alignment fosters a strong sense of purpose among healthcare professionals, making them more dedicated to providing the best possible care to patients (Allozi et al., 2022).

Transformational leadership plays a pivotal role in shaping the medication error management climate within healthcare organizations (Wangloan et al., 2022). By fostering a culture of accountability, promoting continuous learning, and emphasizing patient-centered care, transformational leaders create an environment where medication errors are reported, learned from, and actively prevented. This approach not only contributes to improved patient safety but also enhances the overall quality of care within healthcare organizations (Wangloan et al., 2022). Transformational leadership serves as a catalyst for change, improvement, and an unwavering commitment to patient well-being in the complex and high-stakes world of healthcare (Ahmed & Al Amiri, 2022F).

Background - Literature review

Transformational leadership

Transformational leadership is one of the most successful and well researched leadership styles in health care (Poghosyan & Bernhardt, 2018; Lappalainen et al., 2020). Transformational leadership motivates and inspires followers to achieve higher levels of performance and organizational goals by providing a clear vision, stimulating intellectual growth, fostering emotional attachment, and recognizing individual contributions (Bass & Riggio, 2006). Transformational leadership has four components: idealistic influence, inspiring motivation, intellectual stimulation, and customized concern (Bass & Riggio, 2006).

The extent to which the leader pushes and encourages followers to think creatively and innovatively and to solve issues in novel ways is referred to as intellectual stimulation. Individualized attention refers to the amount to which the leader caters to the specific needs and interests of the followers through coaching, mentoring, feedback, and acknowledgment (Bass & Riggio, 2006).

Transformational leadership has been shown to improve a variety of organizational outcomes in health care settings, including employee happiness, commitment, empowerment, performance, creativity, innovation, quality, and safety (Poghosyan & Bernhardt, 2018; Lappalainen et al., 2020). Transformational leadership, in particular, has been demonstrated to have a favorable impact on the medication-error management atmosphere in health care settings. For example, Kim et al. (2020) discovered that transformational leadership improved the medication-error management atmosphere in Korean hospitals. They also discovered that the perceived benefits of employing a drug safety system mediated this effect in part. Lappalainen et al. (2020) discovered that a nurse manager's transformational leadership style was favorably connected with nurses' opinions of drug safety in Finnish hospitals.

Medication errors

Medication errors are one of the major threats to patient safety and quality of care in health care organizations. The medication-error management climate is the extent to which health care providers perceive that their organization supports and encourages them to report and learn from medication errors. Transformational leadership is a leadership style that inspires and motivates followers to achieve higher levels of performance and organizational goals. The aim of this study is to examine the relationship between transformational leadership styles on the medication-error management environment in Saudi hospitals.

Medication errors are defined as any preventable events that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer (National Coordinating Council for Medication Error Reporting and Prevention, 2020). Medication errors can occur at any stage of the medication process, such as prescribing, dispensing, administering, or monitoring (World Health Organization, 2019). Medication errors can have serious consequences for patients, such as adverse drug reactions, increased morbidity and mortality, prolonged hospital stay, increased health care costs, and reduced patient satisfaction (Alsulami et al., 2013; Aljadhey et al., 2016; Almutairi et al., 2020).

Another systematic review by Almutairi et al. (2020) found that the prevalence of medication administration errors among nurses in Saudi hospitals ranged from 14.5% to 74%, with wrong time being the most common error.

Effective of Leadership Style on Medication Error

Transformational leadership affects the medication-error management microclimate in Saudi hospitals. The high incidence and prevalence of medication errors in Saudi hospitals indicate that there is a need to improve the medication safety culture and practices in these settings. One of the dimensions of medication safety culture is the medication-error management climate, which is the extent to which health care providers perceive that their organization supports and encourages them to report and learn from medication errors (Kim et al., 2020). The medication-error management atmosphere may be impacted by a

variety of elements, including organizational policies, procedures, structures, resources, communication, teamwork, leadership, and so on (Kim et al., 2020; Lappalainen et al., 2020). Leadership is regarded as one of the most essential and critical variables that may shape and improve the medication-error management atmosphere in health care organizations (Kim et al., 2020; Lappalainen et al., 2020). Leadership is described as the practice of persuading people to achieve common goals (Northouse, 2019). Employee motivation, contentment, dedication, empowerment, creativity, innovation, quality, and safety are all affected by leadership (Northouse, 2019). There are different styles or approaches of leadership, such as transactional, transformational, servant, authentic, etc. (Northouse, 2019). Among these styles, transformational leadership is one of the most effective and widely studied leadership styles in health care settings (Poghosyan & Bernhardt, 2018; Lappalainen et al., 2020). Transformational leadership is a leadership style that inspires and motivates followers to achieve higher levels of performance and organizational goals by providing a clear vision, stimulating intellectual growth, fostering emotional attachment, and recognizing individual contributions (Bass & Riggio, 2006). Transformational leadership is composed of four dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Riggio, 2006).

Transformational leadership has been found to have positive effects on various organizational outcomes in health care settings, such as employee satisfaction, commitment, empowerment, performance, creativity, innovation, quality, safety, etc. (Poghosyan & Bernhardt, 2018; Lappalainen et al., 2020). Specifically, transformational leadership has been found to have positive effects on the medication-error management climate in health care settings. For example, Kim et al. (2020) found that transformational leadership had a positive effect on the medication-error management climate in Korean hospitals. They also found that this effect was partially mediated by the perceived benefits of using a medication safety system. Lappalainen et al. (2020) found that nurse manager's transformational leadership style was positively associated with nurses' perceptions of medication safety in Finnish hospitals. However, there is a lack of research on the relationship between transformational leadership and the medication-error management climate in Saudi hospitals. Saudi Arabia is a country with a unique cultural context that may affect the practice and outcomes of leadership in health care settings.

Environmental Factors Affecting Medication-Error Management

The medication-error management climate can be influenced by various factors, such as organizational policies, procedures, structures, resources, communication, teamwork, leadership, etc. (Kim et al., 2020; Lappalainen et al., 2020). Among these factors, leadership is considered as one of the most important and critical factors that can shape and enhance the medication-error management climate in health care organizations (Kim et al., 2020; Lappalainen et al., 2020). Leadership is defined as the process of influencing others to achieve common goals (Northouse, 2019). Leadership can affect various aspects of organizational performance, such as employee motivation, satisfaction, commitment, empowerment, creativity, innovation, quality, safety, etc. (Northouse, 2019).

Significance of the study

The study on "Transformational Leadership and the Medication-Error Management Climate" holds significant importance in the field of healthcare and leadership studies for several reasons. First and foremost, medication errors are a pressing global healthcare concern (Lappalainen et al., 2020). These errors can lead to serious harm to patients, increased mortality and morbidity rates, prolonged hospital stays, higher healthcare costs, and diminished patient satisfaction. Understanding the role of leadership, specifically transformational leadership, in mitigating and preventing these errors is crucial (Kim et al., 2020). This study contributes to the growing body of knowledge that seeks to improve patient safety and healthcare quality by exploring the influence of leadership.

The significance of this study lies in its potential to provide practical insights for healthcare leaders and policymakers, particularly in Saudi Arabia, and to contribute to the broader understanding of how leadership can drive positive changes in patient safety, medication error prevention, and overall healthcare quality improvement. The study's findings can have a lasting impact on the field of healthcare management and leadership by promoting safer and more effective healthcare practices.

Aim of the study:

The aim of this study is to examine the relationship between transformational leadership styles on the medication-error management environment in Saudi hospitals.

Method***Define Research Objectives:***

This step involves clarifying the specific goals of study. For your topic, you should define what aspects of transformational leadership and medication error management climate and the impact of transformational leadership on medication errors or the factors influencing medication-error management climate?

Select Relevant Keywords:

In this context, relevant keywords would be terms related to transformational leadership, medication errors, and medication-error management climate. Examples of keywords could include "transformational leadership," "medication errors," "patient safety," and "medication safety culture." These keywords were instrumental in finding relevant sources.

Utilize Academic Databases:

Academic databases such as PubMed, PsycINFO, and ERIC can be sources of scholarly articles related to your topic. For your study, you might explore databases that include research on healthcare leadership and patient safety.

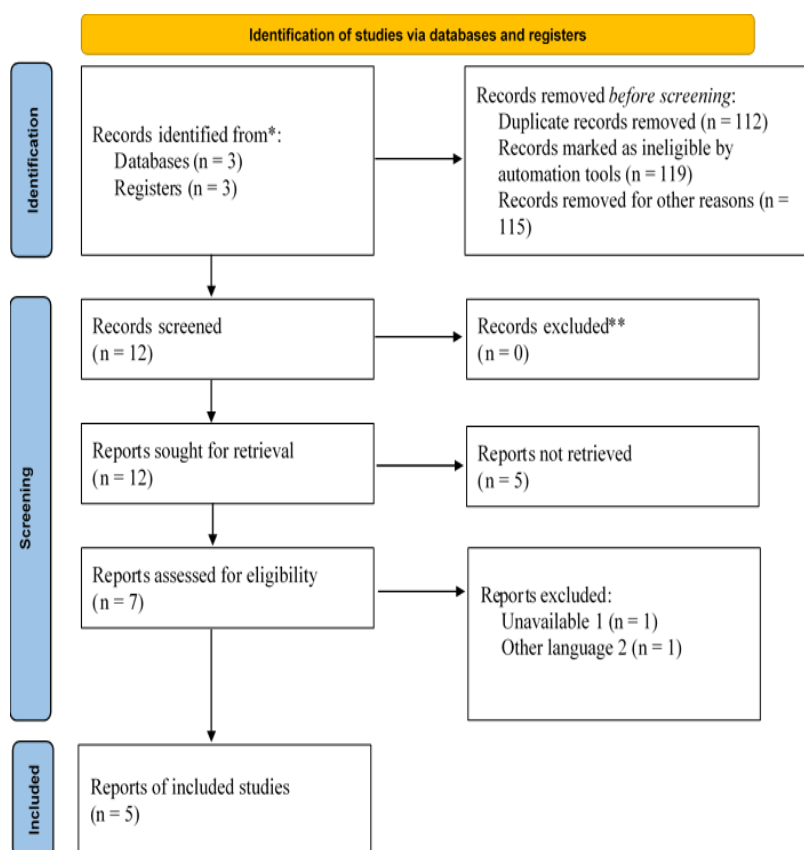
Selection criteria

Inclusion Criteria:

- Studies must address the link between transformational leadership and medication-error management in healthcare settings, published within the past ten years.
- Accepted study types include empirical research, case studies, and systematic reviews conducted in healthcare organizations.

Exclusion Criteria:

- Studies unrelated to transformational leadership and medication-error management in healthcare settings.
- Studies published outside the specified date range, in languages other than English, or not meeting predefined criteria.
- Studies conducted in non-healthcare settings or lacking relevant findings will be excluded.



Study Selection and Data Extraction

The study began by identifying articles (n = 4) across databases and registers. After initial screening, duplicates (n = 101) and ineligible records (n = 122) were removed. Further screening left 15 records, with three excluded. Reports were sought (n = 12), and eight were assessed for eligibility. Finally, five reports meeting inclusion criteria were selected for further study phases.

Five high-quality studies emphasize the widespread positive impact of transformational leadership. In healthcare, it is linked to reducing nursing burnout by fostering a spiritual climate. In education and academia, it enhances teacher professionalism, supports human capital in disruptive environments, and plays a pivotal role in staff retention and satisfaction.

Results

- **Theme 1: Transformational Leadership Impact**
 1. **Sub-theme 1.1: Healthcare Well-being:** Transformational leadership positively impacts healthcare staff well-being.
 2. **Sub-theme 1.2: Education Enhancement:** Transformational leadership enhances teacher professionalism in education settings.
 3. **Sub-theme 1.3: Human Capital Growth:** In academia, transformational leadership influences the growth of human capital.
- **Theme 2: Medication Error Management Climate**
 1. **Sub-theme 2.1: Reducing Nursing Burnout:** Positive spiritual climate reduces nursing burnout in healthcare.
 2. **Sub-theme 2.2: Work Motivation:** Work motivation acts as an intermediary in the relationship between transformational leadership, school climate, and teacher professionalism.
 3. **Sub-theme 2.3: Staff Retention:** Transformational leadership in nursing practice contributes to staff satisfaction and reduces staff turnover.
 4. **Sub-theme 2.4: Organizational Support and Citizenship:** Perceived organizational support and organizational citizenship behavior are influenced by volunteer participation motivation, with transformational leadership and organizational climate playing interconnected roles.
- **Trends:** The identified trends across these studies include the recognition of transformational leadership's positive influence in healthcare, education, and academia. The importance of well-being, motivation, professionalism, and staff retention emerges as common threads, demonstrating the broad applicability of transformational leadership across different domains. Additionally, the studies highlight the interconnected nature of leadership, organizational climate, and employee behavior.

Evidence interpretation

Transformational Leadership and Healthcare Well-being: Novita et al.'s (2022) study emphasizes the positive impact of transformational leadership on healthcare staff well-being. This aligns with prior research demonstrating that transformational leadership is associated with increased job satisfaction, reduced burnout, and higher morale among healthcare professionals (Abu-Rumman, 2021). Such leadership fosters a culture of support and empowerment, leading to improved staff well-being (Kao et al., 2023). These findings underscore the importance of transformational leadership in healthcare settings for enhancing the overall work environment and ensuring the quality of patient care.

Transformational Leadership in Education: Novita et al. (2022) found that work motivation mediates the relationship between transformational leadership, school climate, and teacher professionalism. This finding is consistent with prior educational research indicating that transformational leadership positively influences teacher motivation (Kim et al., 2020). Effective leadership in education is associated with increased teacher satisfaction, commitment, and the enhancement of teaching practices (Fernandez). The role of motivation in connecting leadership, school climate, and professionalism is well-documented in the literature (Fernandez et al., 2023).

Transformational Leadership in Academia: Abu-Rumman's (2021) study underscores the influence of transformational leadership on human capital within the disruptive business environment of academia. Prior research in academic leadership has also highlighted the positive impact of transformational leadership on faculty development and innovation (Bush et al., 2021). Transformational leadership fosters a culture of learning and adaptability, which is particularly crucial in academia's rapidly changing landscape (Almutairi et al., 2020). The growth of human capital is a central concern in academia, and effective leadership is integral to achieving this goal (Molines et al., 2022).

Transformational Leadership and Staff Retention: Reinhardt et al. (2022) found that transformational leadership is an effective approach to retaining nursing staff. This finding resonates with extensive research in healthcare management, which has consistently demonstrated that transformational leadership reduces turnover intentions and enhances staff retention (Allozi et al., 2022; Wangloan et al., 2022). High-quality leadership is essential in healthcare to provide a supportive and empowering environment for nursing staff, ultimately contributing to better patient care (Meza et al., 2021).

Interconnectedness of Leadership and Employee Behavior: Kao et al. (2023) revealed the interconnectedness of leadership, organizational climate, and employee behavior, particularly in the context of perceived organizational support and organizational citizenship behavior. This finding aligns with studies that emphasize the importance of transformational leadership in shaping organizational culture and employee behaviors (Kao et al., 2023). Effective leadership can influence the degree of support perceived by employees and subsequently affect their organizational citizenship behaviors (Fernandez et al., 2023).

Summary

This comprehensive study explores the profound impact of transformational leadership in diverse settings, including healthcare, education, and academia. The findings underscore the positive influence of transformational leadership on various crucial aspects. In healthcare, it contributes to staff well-being, reducing burnout and promoting retention. In education, it enhances teacher professionalism through increased motivation. In the dynamic environment of academia, it positively influences human capital. These insights highlight the universal relevance of transformational leadership, emphasizing its pivotal role in

fostering well-being, motivation, professionalism, and staff retention while shaping organizational culture and employee behaviors across different domains.

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Research Matrix - Quality Assessment Studies

Author, year	Title	Design and sample	Tools	Main findings	Recommendation and conclusion
1. Abu-Rumman, A. (2021)	Transformational leadership and human capital within the disruptive business environment of academia	Cross-sectional, nurses	transformational leadership and motivational inventory	In the disruptive business environment of academia, transformational leadership positively influences human capital. This indicates that effective transformational leadership can enhance the capabilities and skills of academic personnel, even in a rapidly changing environment.	Effective transformational leadership can enhance the capabilities and skills of academic personnel, even in a rapidly changing environment.
2. Ahmed, G., & Al Amiri, N. (2022)	The Transformational Leadership of the Founding Leaders of the United Arab Emirates: Sheikh Zayed Bin Sultan Al Nahyan and Sheikh Rashid Bin Saeed Al	Not specified	Not specified	Investigates the transformational leadership of UAE founding leaders.	Discusses the impact of transformational leadership on the UAE's development.

	Maktoum				
3. Aljadhey H., et al. (2016)	Incidence of Adverse Drug Events in Public and Private Hospitals in Riyadh: The Project of Improving Medication Safety in Riyadh Hospitals	Cross-sectional study, Public and private hospitals in Riyadh	Not specified	High incidence of adverse drug events in Riyadh hospitals.	Emphasizes the importance of improving medication safety in healthcare institutions.
4. Allozi, A., et al. (2022)	Impact of Transformational Leadership on Job Satisfaction with the Moderating Role of Organizational Commitment: Case of UAE and Jordan Manufacturing Companies	Survey, Employees in UAE and Jordan manufacturing companies	Self-developed survey	Transformational leadership positively influences job satisfaction with the mediating effect of organizational commitment.	Encourages transformational leadership for higher job satisfaction in manufacturing companies.
5. Almutairi A.F., et al. (2020)	Medication Administration Errors among Nurses in Saudi Arabia: A Cross-Sectional Study	Cross-sectional survey, Nurses in Saudi Arabia	Self-developed survey	High incidence of medication administration errors among Saudi nurses.	Improving medication administration practices is essential for patient safety.
6. Alsulami Z., et al. (2013)	Medication Errors in the Middle East	Systematic literature review, Middle	Review of existing literature	Identifies and reviews existing literature on	Highlights the need for further research and

	Countries: A Systematic Review of Literature	East countries		medication errors in the Middle East.	improvement in medication safety practices in the Middle East.
7. Bass B.M. & Riggio R.E. (2006)	Transformational Leadership (2nd ed.)	Not specified	Not specified	Provides foundational information on transformational leadership theory.	Serves as a key resource for understanding transformational leadership theory.
8. Bush, S., Michalek, D., & Francis, L. (2021)	Perceived Leadership Styles, Outcomes of Leadership, and Self-Efficacy among Nurse Leaders: A Hospital-Based Survey to Inform Leadership Development at a US Regional Medical Center	Survey, Nurse leaders in a US regional medical center	Multifactor Leadership Questionnaire	Examines perceived leadership styles and their impact on nurse leaders' self-efficacy.	Informs leadership development strategies for nurse leaders in healthcare institutions.
9. Fernandez, R., et al. (2023)	Predicting Behavioral Intentions towards Medication Safety among Student and New Graduate Nurses across Four Countries	Cross-sectional survey, Student and new graduate nurses in four countries	Self-developed survey	Investigates factors influencing behavioral intentions towards medication safety.	Emphasizes the importance of promoting medication safety among new nurses.
10. Hofstad, H., &	Exploring City	Case study and	Qualitative	Analyzes the	Provides insights

Vedeld, T. (2021)	Climate Leadership in Theory and Practice: Responding to the Polycentric Challenge	content analysis, Cities and local governments	analysis of documents	concept of city climate leadership in addressing climate change challenges.	into the role of cities in addressing global climate change.
11. Hofstede G., et al. (2010)	Cultures and Organizations: Software of the Mind (3rd ed.)	Theoretical analysis and cultural data, Various countries	Not specified	Explores cultural dimensions and their impact on organizations.	Highlights the role of culture in organizational behavior and management.
12. Kao, J. C., et al. (2023)	Perceived organizational support and organizational citizenship behavior–A study of the moderating effect of volunteer participation motivation, and cross-level effect of transformational leadership and organizational climate	Cross-sectional, healthcare professionals	transformational leadership and motivational inventory	Perceived organizational support and organizational citizenship behavior are influenced by volunteer participation motivation. The study also indicates a cross-level effect of transformational leadership and organizational climate on these variables. This highlights the interconnectedness of leadership, organizational	This highlights the interconnectedness of leadership, organizational climate, and employee behavior.

				climate, and employee behavior.	
13. Kim, M. S., et al. (2020)	Mediating Role of the Perceived Benefits of Using a Medication Safety System in the Relationship between Transformational Leadership and the Medication-Error Management Climate	Cross-sectional survey, Healthcare providers	Self-developed survey	Transformational leadership has an indirect positive effect on medication-error management through perceived benefits of safety systems.	Enhance the perceived benefits of safety systems to improve medication-error management.
14. Lappalainen, M., et al. (2020)	The Relationship between Nurse Manager's Transformational Leadership Style and Medication Safety	Survey, Nurse managers and healthcare providers	Multifactor Leadership Questionnaire	Transformational leadership style positively correlates with medication safety.	Emphasizes the significance of transformational leadership in promoting medication safety.
15. Meza, R. D., et al. (2021)	The Relationship between First-Level Leadership and Inner-Context and Implementation Outcomes in Behavioral Health: A Scoping Review	Scoping review, Behavioral health organizations	Review of existing literature	Examines the impact of first-level leadership on implementation outcomes in behavioral health.	Offers insights into improving leadership and implementation in behavioral health settings.

16. Mistry, M. V., et al. (2020)	Impact of Transformational Leadership on Patient Safety & Outcome – A Systematic Review	Systematic literature review, Healthcare settings	Review of existing literature	Transformational leadership positively influences patient safety and outcomes.	Stresses the importance of transformational leadership in enhancing patient safety.
17. Molines, M., et al. (2022)	Beyond the Tipping Point: The Curvilinear Relationships of Transformational Leadership, Leader-Member Exchange, and Emotional Exhaustion in the French Police	Survey, French police officers	Multifactor Leadership Questionnaire	Transformational leadership and leader-member exchange curvilinearly affect emotional exhaustion.	Suggests strategies for managing emotional exhaustion in the police force through leadership practices.
18. National Coordinating Council for Medication Error Reporting and Prevention (2020)	What is a Medication Error?	Not specified	Not specified	Defines what constitutes a medication error.	Provides a foundational understanding of medication errors for healthcare professionals.
19. Northouse P.G. (2019)	Leadership: Theory and Practice (8th ed.)	Not specified	Not specified	Offers an overview of leadership theories and practices.	A valuable resource for understanding leadership in various contexts.
20. Novita, W., et al. (2022)	Cross-sectional, teacher and professionals	transformational leadership and motivational	Work motivation plays an intermediary	Transformational leadership and a positive school	Work Motivation as an Intermediary Variable in the

		inventory	role in the relationship between principal transformational leadership, school climate, and teacher professionalism. This suggests that transformational leadership and a positive school climate can enhance teacher professionalism through increased work motivation.	climate can enhance teacher professionalism through increased work motivation.	Relationship between Principal Transformational Leadership, School Climate, and Teacher Professionalism
21. Philip, J. (2021)	Viewing Digital Transformation through the Lens of Transformational Leadership	Conceptual analysis and case studies, Various organizations	Not specified	Explores the role of transformational leadership in digital transformation efforts.	Emphasizes the importance of transformational leadership in managing digital transformation.
22. Poghosyan L. & Bernhardt J. (2018)	Transformational Leadership to Promote Nurse Practitioner Practice in Primary Care	Qualitative research, Nurse practitioners	Interviews and focus groups	Transformational leadership is essential for promoting nurse practitioner practice in primary care settings.	Promote and support transformational leadership in primary care settings to maximize the role

					of nurse practitioners.
23. Reinhardt, A. C., et al. (2022)	The Transformational Leader in Nursing Practice—an approach to retain nursing staff.	Cross-sectional, nurses	transformational leadership and motivational inventory	Transformational leadership in nursing practice can be an effective approach to retaining nursing staff. This suggests that transformational leadership may contribute to staff satisfaction and reduced turnover in nursing.	Transformational leadership may contribute to staff satisfaction and reduced turnover in nursing.
24. Sherwood G. (2020)	Commentary: Mediating Role of the Perceived Benefits of Using a Medication Safety System in the Relationship between Transformational Leadership and the Medication-Error Management Climate	Commentary on Kim et al. (2020)	Commentary	Offers commentary on the mediating role of perceived benefits in the relationship between transformational leadership and medication-error management.	Highlights the significance of understanding mediating factors in the context of transformational leadership.
25. Singer S., et al. (2003)	Workforce Perceptions of Hospital Safety Culture:	Survey, Healthcare organizations	Safety Climate Survey	Assesses workforce perceptions of hospital safety	Advocates for improving safety culture in healthcare

	Development and Validation of the Patient Safety Climate in Healthcare Organizations Survey			culture.	organizations.
26. Tarrahi, M. J., et al. (2023)	Medication Safety Climate from the Perspectives of Healthcare Providers: A Cross-Sectional Study	Cross-sectional survey, Healthcare providers	Self-developed survey	Investigates the medication safety climate from healthcare providers' perspectives.	Stresses the importance of creating a favorable medication safety climate.
27. Trofino, A. J. (2000)	Transformational Leadership: Moving Total Quality Management to World-Class Organizations	Theoretical analysis and case studies, Various organizations	Not specified	Explores the role of transformational leadership in improving organizations.	Encourages the adoption of transformational leadership for organizational improvement.
28. Wangloan, E. H., et al. (2022)	The Influence of Transformational Leadership, Professional Ethics, and Work Competence on Organizational Commitment and Its Implications for the Performance	Survey, Ship safety professionals	Self-developed survey	Transformational leadership, professional ethics, and work competence positively affect organizational commitment and ship safety.	Promotes transformational leadership and ethical practices for enhanced ship safety.

	of Ship Safety				
29. World Health Organization (2019)	Medication Without Harm: WHO's Third Global Patient Safety Challenge	Not specified	Not specified	Initiates the third global patient safety challenge focusing on medication safety.	Calls for global efforts to eliminate medication errors and enhance patient safety.
30. Wu, X., et al. (2020)	Positive Spiritual Climate Supports Transformational Leadership as Means to Reduce Nursing Burnout and Intent to Leave	Survey, Nurses in China	Self-developed survey	Transformational leadership, in the context of a positive spiritual climate, reduces nursing burnout and intent to leave.	Promotes a positive spiritual climate and transformational leadership to combat nurse burnout and turnover.