THE JOURNAL OF NURSING ADMINISTRATION

Leadership Styles and Nurses' Innovative Behaviors

A Systematic Review

Leodoro J. Labrague, DM, PhD, RN, CNE
Lei Marcelle Toquero, MAN, RN

OBJECTIVE: In an increasingly competitive healthcare climate, ensuring an innovative nursing workforce is essential for organizational success and survival.
BACKGROUND: The authors aimed to evaluate the literature examining the association between leadership styles and innovative behaviors in the nursing workforce.
METHODS: A systematic review of articles from 5 databases was conducted from August 2022 to October 2022.
RESULTS: A total of 21 articles published in the English language were included in the review. This study provides evidence for the vital role of "relationship-oriented" leadership styles in fostering innovative behaviors among nurses. However, more research is needed to examine how "task-oriented" leadership styles contribute to innovativeness in nurses. Twelve mediators linking leadership styles to healthcare workers' innovative behaviors were identified and clustered into motivation-based, relation-based, and affective mediators.
CONCLUSION: Organizational strategies to foster relationship-based leadership styles among healthcare leaders are vital to support nurses' innovative behaviors.

In an increasingly competitive healthcare environment, healthcare innovation is vital to ensure organizational efficiency and effectiveness and gain a competitive advantage. Healthcare workers, including nurses, are not mere consumers of innovations but are vital for facilitating innovation in healthcare.[1,2] Innovative work practices among nurses may be implemented in the form of the gradual elimination of old and non–evidence-based healthcare practices, the improvement of existing care systems or models,[3] or the gradual adoption of evidence-based healthcare processes, products, or services in the workplace.[4]

During the height of the coronavirus crisis, the unparalleled value of innovation in healthcare was proven through the introduction of new and innovative healthcare models to better respond to the unique needs of coronavirus patients while protecting the health of the care providers.[5-7] Technological innovations included the use of artificial intelligence to facilitate the screening and diagnosis of suspected patients, digital apps for surveillance and contact tracing, and telenursing and telemedicine to deliver medical and nursing care to remote clients.[5,6] The utilization of an innovative interactive space for care to deliver patient-centered nursing care was likewise found to significantly improve health outcomes in patients during the height of the pandemic.[7] Therefore, it is vital for healthcare organizations to find ways to improve innovative behaviors among nurses and implement strategies to support these behaviors.

Employee innovative behaviors are defined as the "intentional proposal and application of novel and improved ideas, processes, practices and policies aimed at organizational effectiveness, business success and long-term sustainability."[8(p3)] Nursing leaders and managers, through leadership and management, may shape and influence the overall organizational climate for innovation and innovative behaviors among

Author Affiliations: Clinical Assistant Professor (Dr Labrague) and Instructor (Toquero), Marcella Niehoff School of Nursing, Loyola University Chicago, Illinois.

The authors declare no conflicts of interest.

Correspondence: Dr Labrague, Marcella Niehoff School of Nursing, Loyola University Chicago, 421 S Elmwood Ave, Apt 6, Oakpark, IL, 60302 (Leo7_ci@yahoo.com).

nurses.[9-13] Earlier reports have identified leadership styles, including transformational and authentic leadership, as strong precursors of creativity and innovativeness in subordinates.[14] Transformational leaders, through intellectual stimulation, may assist and inspire their subordinates to propose new ideas and solutions to improve care outcomes,[10,11] whereas authentic leaders support innovative behaviors among nurses by building their confidence, optimism, and resilience to easily adopt innovations in the practice area.[12,13] Finally, effective leaders create a positive work culture where subordinates can think creatively, develop innovative ideas, and freely exchange ideas and share knowledge, which is vital to improve healthcare care processes and outcomes.[15,16]

To date, an abundance of research has been conducted to examine the effects of the various leadership styles of nurse managers on the innovative behaviors of their nurse subordinates[9-13]; however, no studies were found that synthesized this evidence. Hence, this systematic review was conducted to examine the association between leadership styles and innovative behaviors among nurses.

Literature Search and Strategies

An electronic search was conducted using 5 sources and the following key search terms: "innovation," "leadership," "innovative behavior," "creativity," and "nursing." Peer-reviewed articles in the English language that examined the association between healthcare managers' leadership styles and innovative behaviors were included in the review.

A total of 380 articles were identified during the initial search; of these, 167 were duplicates. Screening article titles and abstracts resulted in the further elimination of 171 articles. The remaining 42 articles were extensively evaluated and screened, resulting in the further exclusion of 21 articles. A total of 21 articles were deemed relevant for the review (Figure 1). Two independent researchers read through and evaluated the included articles. Relevant data were extracted and are presented in SDC #1, http://links.lww.com/JONA/B45. A conventional content analysis was used to examine the effect of leadership styles on innovative behaviors among nurses as well as its mediators. To determine the final categories of the mediators, the reviewers sorted out all mediators and compared them for any commonalities (Tables 1 and 2).

Results

Characteristics of Included Articles

Twenty-one relevant articles were included in the review. These articles were conducted in 13 countries.

All studies were cross-sectional, and the sample size ranged from 65 to 2018 participants.

Effects of Leadership on Innovative Behaviors

Transformational leadership, a leadership style that focuses on inspiring and motivating employees to effectively bring about positive changes in their behaviors,[14] was examined in 14 studies.[10,11,17-27,33] All these studies demonstrated that transformational leadership positively influences nurses' innovativeness in the nursing practice area. Inclusive leadership, an emerging form of leadership that emphasizes the equitable treatment of employees and their ideas,[34] was tested in relation to innovative behaviors among nurses in 3 studies.[28,29,35] All the studies showed the positive influence of inclusive leadership on innovative behaviors among the nursing staff (Table 1).

Two studies examined the association between humble[30,31] and empowering leadership[22,29] and innovative behaviors among nurses and found them to be positive and significant. Ambidextrous leadership, a much more recent style of leadership, was examined in 1 study and was found to have a positive effect on the innovativeness of nurses.[36] Other types of leadership including servant[32] and authentic leadership[13] were tested in 1 study each and shown to positively influence nurses' innovative behaviors.

Mediators Linking Leadership Styles and Innovative Behaviors

This systematic review identified numerous mediators (Table 2) linking leadership styles to nurses' innovative behaviors that were clustered into 3 categories: motivation based, relation based, and affective.

Motivation-based mediators, such as psychological empowerment, psychological safety, patient safety climate, and innovation climate, were examined in 8 studies. Psychological empowerment was the most frequently tested motivation-based mediator, followed by work engagement and shared leading. Psychological empowerment acted as a mediator linking empowering,[29] inclusive,[29] and transformational[20] leadership to innovative behaviors in nurses. Psychological safety acted as a link between inclusive leadership and innovative behaviors,[36] whereas patient safety climate[35] and innovation climate[29] mediated the relationship between transformational leadership and nurses' innovative behaviors.

In 2 studies, relation-based mediators were found to influence the relationship between leadership and nurses' innovative behavior. Group cohesion mediated the relationship between transformational leadership and innovative behavior,[26] whereas team learning was found to be a significant mediator linking transformational leadership and innovative

```
Identification    PubMed, CINAHL, SCOPUS,
                  MEDLINE and PsychINFO
                      (n = 380)
                                          ───────▶   Duplicates
                                                     (n = 167
Screening         Title and Abstracts Screening
                      (n = 213)
                                          ───────▶   Papers excluded because titles and
                                                     abstracts did not meet the selection
                                                     criteria
                                                     (n = 171)
Eligibility       Full Text Screening
                      (n = 42)
                                          ───────▶   Papers did not meet the selection
                                                     criteria (n =21)
Included          Studies included in the review
                      (n = 21)
```
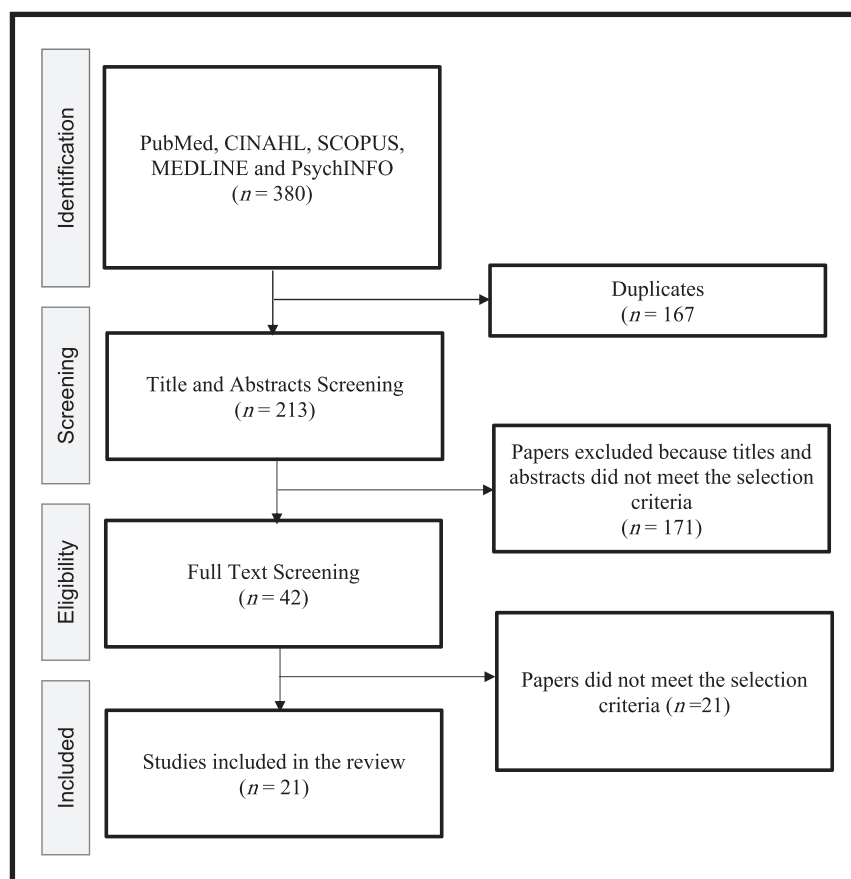
Figure 1. Diagram of the process used to identify references for the review.

behavior.[26] In 1 study, shared leading had a partial mediating effect on the relationship between transformational[22] and empowering[22] leadership and nurses' innovativeness.

Five studies examined affective mediators including work engagement, job satisfaction, and job autonomy. Work engagement partially mediated the relationship between authentic[13] and transformational[31] leadership and nurses' innovative behaviors. Job autonomy[28] partially mediated the relationship between inclusive leadership and nurses' innovativeness. In 1 study, polychronicity mediated the relationship between inclusive leadership and innovation among nurses.[36]

Discussion

Overall, 90% (n = 19) of the leadership styles examined were categorized as the "relationship-based" leadership style, except for the "transactional" and "laissez-faire" leadership styles that focus on task completion and were reported in 2 studies.[18,33] Regardless of the styles of leadership tested, analyses of individual studies revealed a positive association between the manager's leadership style and nurses' innovative behaviors. Relationship-based leadership

styles, which focus on relationships and people, have long been recognized as an effective style of leadership and were strongly associated with a broad list of positive outcomes among the nursing staff.[16] In nursing, effective leadership styles, including authentic, transformational, ethical, and resonant styles,[14-16] among others, were found to improve work productivity and performance[15] among nurses and were associated with improved healthcare delivery.[37] Interestingly, transactional and laissez-faire leadership styles were also found to increase innovativeness in nurses.[18,33] However, given that only 2 studies tested such types of leadership in relation to nurses' innovative behavior, generating a meaningful conclusion remains difficult. Hence, further studies are needed to confirm whether task-focused leadership styles generate innovative behaviors among nurses.

Overwhelmingly, the transformational leadership style was tested in 67% (n = 14) of the articles reviewed. This result, although interesting, is not surprising given the different features of transformational leadership that inspire, motivate, and empower employees to achieve goals.[14] Through "intellectual stimulation," a transformational leader assists individual employees to formulate innovative ideas or

Table 1. *Relationships Between Leadership Styles on nurses' Innovative Behaviors*

Leadership Style	Sources	Direction	Significance	No. Studies
Transformational	Weng et al[17] (2015)	+	Significant	14
	Abd El Muksoud et al[18] (2022)	+	Significant	
	Afzan and Aziz[10] (2020)	+	Significant	
	Ahmed et al (2019)	+	Significant	
	Sarıköse and Türkmen[19] (2020)	+	Significant	
	Umrani and Afsar[20] (2019)	+	Significant	
	Weng et al[17] (2015)	+	Significant	
	Afsar and Masood[11] (2018)	+	Significant	
	Głód[21] (2018)	+	Significant	
	Mohammed and Al-Abrrow[22] (2022)	+	Significant	
	Masood and Afsar[23] (2017)	+	Significant	
	Reuvers et al[24] (2008)	+	Significant	
	Saeed et al[25] (2023)	+	Significant	
	Sanders and Shipton[26] (2012)	+	Significant	
	Wilson-Evered et al[27] (2001)	+	Significant	
Inclusive	Wang et al (2019)	+	Significant	3
	Shakil et al[28] (2021)	+	Significant	
	Zhang et al[29] (2022)	+	Significant	
Humble	Al Wali et al[30] (2022)	+	Significant	2
	Yang et al[31] (2019)	+	Significant	
Transactional	Abd El Muksoud et al[18] (2022)	+	Significant	2
	Ahmed et al (2019)	+	Significant	
Laissez-fair	Abd El Muksoud et al[18] (2022)	+	Significant	2
	Ahmed et al (2019)	+	Significant	
Empowering	Mohammed and Al-Abrrow[22] (2022)	+	Significant	2
	Zhang et al[29] (2022)	+	Significant	
Ambidextrous	Saeed et al[25] (2023)	+	Significant	2
Servant	Kül and Sönmez[32] (2021)	+	Significant	1
Authentic	Lv et al[13] (2022)	+	Significant	1

The positive sign (+) indicates positive effects, whereas the negative sign (−) indicates negative effects.

approaches to effectively accomplish their tasks and ignites their creativity when addressing issues and problems related to work.[10-14] In healthcare, intellectual stimulation helps nurses to keep abreast of current evidence and propose new solutions or innovations to optimize patient care outcomes, prevent adverse events, and improve care quality.[10-14,38,39] This finding is in accordance with international reports linking transformational leadership to an overall improvement in individuals' innovative behaviors, the maintenance of an innovative climate in the workplace, and an overall increase in organizational innovativeness.[40,41] Previous reports have also established the positive impact of transformational leadership on employees' creativity, innovation capability, and team innovation.[42,43]

Northouse[44(p6)] defined leadership as "a process whereby an individual influences a group of individuals to achieve a common goal"; hence, a leader's

Table 2. *Summary of Mediators Between Leadership Styles and Innovative Behaviors*

Leadership Style	Sources	Direction	Significance
Empowering leadership → psychological empowerment → innovation	Zhang et al[29] (2022)	+ +[a]	Significant
Inclusive leadership → psychological empowerment → innovation	Zhang et al[29] (2022)	+ +[a]	Significant
Transformational leadership → psychological empowerment → innovation	Umrani and Afsar[20] (2019)	+ +[a]	Significant
Authentic leadership → work engagement → innovation	Lv et al[13] (2022)	+ +[a]	Significant
Transformational leadership → work engagement → innovation	Yang et al[31] (2019)	+ +[a]	Significant
Inclusive leadership → job autonomy → innovation	Shakil et al[28] (2021)	+ +[a]	Significant
Transformational leadership → patient safety climate → innovation	Weng et al[17] (2015)	+ +[a]	Significant
Transformational leadership → innovation climate → innovation	Weng et al[17] (2015)	+ +[a]	Significant
Transformational leadership → shared leadership → innovation	Mohammed and Al-Abrrow[22] (2022)	+ +[a]	Significant
Empowering leadership → shared leadership → innovation	Mohammed and Al-Abrrow[22] (2022)	+ +[a]	Significant
Transformational leadership → team learning → innovation	Sanders and Shipton[26] (2012)	+ +[a]	Significant
Transformational leadership → cohesion → innovation	Sanders and Shipton[26] (2012)	+ +[a]	Significant

The positive sign (+) indicates positive effect.
[a]Partial mediating effect.

behavior may influence subordinates' outcomes through more proximate variables called mediators. In this systematic review, 9 mediators (Figure 2) were identified, clustered into motivation-based, relation-based, and affective mediators, that linked leadership styles to nurses' innovative behaviors. This result provided a better understanding of the nature of the relationships between a leader's style of leadership and nurses' innovativeness. This finding also corroborated earlier studies involving nursing and nonnursing samples that identified motivation-based mediators (eg, psychological empowerment, psychological safety),[45] affective mediators (eg, job satisfaction, work engagement),[46] and relation-based mediators (eg, shared leading, group cohesion)[47] as significant mediators that help explain how leadership influences individual and organizational innovativeness.

Implications for Nursing Practice

Hospital administrators should implement evidence-based strategies to build leadership competence in nurses. Involvement in leadership education interventions was seen to have positive effects on nurses' leadership capabilities.[16] Leadership mentoring as an essential component of leadership development significantly enhanced leadership efficacy, management skills, decision-making skills, and organizational skills.[37,39]

Other leadership capability-building strategies, including leadership coaching, leadership simulation, and leadership fellowship, as well as obtaining leadership certifications (eg, clinical nurse leader certificate), were found to have a significant impact on leadership

skills in nurse managers.[48,49] Given the different threats to the healthcare sector, nurse leaders should model and remodel effective leadership to inspire and empower practices to embrace change. Collectively, these strategies will result in subordinates who are highly inspired and motivated to propose new ideas and solutions and suggest nursing innovations that are helpful to patients and could contribute to the overall improvement of healthcare and nursing services.

Hospital administrators should design programs to foster innovative behaviors among nurses by targeting the different mediators identified in this review (Figure 2). For instance, hospital administrators should strengthen nurses' job satisfaction and work engagement by satisfying the various work dimensions and providing adequate organizational support, sufficient structural resources, and health/wellness resources. To support innovative behaviors among nurses, hospital administrators should provide adequate organizational support and a positive work environment to allow innovation among nurses and help them gain confidence and competence in the utilization of new and innovative treatments, interventions, or strategies. By offering advanced professional development, including opportunities for specialty certification and further education, hospital administrators can better reinforce innovative behaviors among nurses.

Conclusion

This is the 1st study to examine the association between nurse managers' leadership styles and nurses' innovativeness; hence, it contributes vital knowledge that
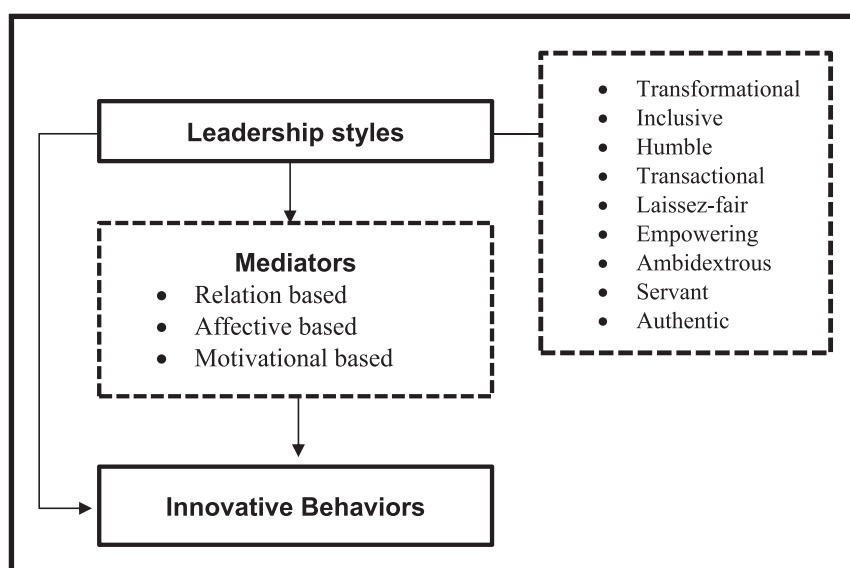

Figure 2. Synthesis of the review findings.

could assist hospital administrators when developing mechanisms to foster healthcare and nursing innovation. The findings of this review strongly support the use of "relationship-oriented" leadership styles in enhancing innovative behaviors among nurses. However, more research is needed to examine how other styles of leadership, particularly those that focus on tasks, could enhance nurses' innovative behaviors.

References

1. Kelly CJ, Young AJ. Promoting innovation in healthcare. *Future Healthc J*. 2017;4(2):121-125.
2. Weintraub P, McKee M. Leadership for innovation in healthcare: an exploration. *Int J Health Policy Manag*. 2019;8(3):138-144.
3. Milella F, Minelli EA, Strozzi F, Croce D. Change and innovation in healthcare: findings from literature. *Clinicoecon Outcomes Res*. 2021;13:395-408.
4. Moullin JC, Sabater-Hernández D, Fernandez-Llimos F, Benrimoj SI. A systematic review of implementation frameworks of innovations in healthcare and resulting generic implementation framework. *Health Res Policy Syst*. 2015;13(1):16.
5. Golinelli D, Boetto E, Carullo G, Nuzzolese AG, Landini MP, Fantini MP. Adoption of digital technologies in health care during the COVID-19 pandemic: systematic review of early scientific literature. *J Med Internet Res*. 2020;22(11):e22280.
6. Vrontis D, El Chaarani H, El Abiad Z, El Nemar S, Yassine Haddad A. Managerial innovative capabilities, competitive advantage and performance of healthcare sector during Covid-19 pandemic period. *Foresight*. 2022;29;24(3/4):504-526.
7. Petry H, Pelzelmayer K, Ernst J, Thuerlimann E, Naef R. Nurse-patient interaction during the Covid-19 pandemic: creating and maintaining an interactive space for care. *J Adv Nurs*. 2023;79(1):281-296.
8. Kwon K, Kim T. An integrative literature review of employee engagement and innovative behavior: revisiting the JD-R model. *Hum Resour Manag Rev*. 2020;30(2):100704.
9. Asurakkody TA, Shin SY. Innovative behavior in nursing context: a concept analysis. *Asian Nurs Res*. 2018;12(4):237-244.
10. Afzan LI, Aziz WA. The effectiveness of transformational leadership and job satisfaction on nurse innovative behaviour in healthcare Malaysia. *Int J Acad Res Bus Soc Sci*. 2020;10(12):806-821.
11. Afsar B, Masood M. Transformational leadership, creative self-efficacy, trust in supervisor, uncertainty avoidance, and innovative work behavior of nurses. *J Appl Behav Sci*. 2018;54(1):36-61.
12. Anwar A, Abid G, Waqas A. Authentic leadership and creativity: moderated meditation model of resilience and hope in the health sector. *Eur J Investig Health Psychol Educ*. 2019;10(1):18-29.
13. Lv M, Jiang SM, Chen H, Zhang SX. Authentic leadership and innovation behaviour among nurses in China: a mediation model of work engagement. *J Nurs Manag*. 2022;30(7):2670-2680.
14. Avolio BJ, Yammarino FJ. *Transformational and Charismatic Leadership: The Road Ahead*. Howard House, Wagon Lane, Bingley BD16 1WA, UK: Emerald Group Publishing; 2013.
15. Alilyyani B, Wong CA, Cummings G. Antecedents, mediators, and outcomes of authentic leadership in healthcare: a systematic review. *Int J Nurs Stud*. 2018;(83):34-64.
16. Cummings GG, Lee S, Tate K, et al. The essentials of nursing leadership: a systematic review of factors and educational interventions influencing nursing leadership. *Int J Nurs Stud*. 2021;115:103842.
17. Weng RH, Huang CY, Chen LM, Chang LY. Exploring the impact of transformational leadership on nurse innovation behaviour: a cross-sectional study. *J Nurs Manag*. 2015;23(4):427-439.
18. Abd El Muksoud NO, Metwally FG, Ata AA. Leadership behaviors and innovative work behaviors among nurses. *Zagazig Nurs J*. 2022;18(2):1-4.
19. Sarıköse S, Türkmen E. The relationship between demographic and occupational variables, transformational leadership perceptions and individual innovativeness in nurses. *J Nurs Manag*. 2020;28(5):1126-1133.
20. Umrani WA, Afsar B. How transformational leadership impacts innovative work behaviour among nurses. *Br J Health Care Manag*. 2019;25(12):1-6.
21. Głód W. Transformational leadership style in the relationship between innovation and efficiency of healthcare units in Poland. *Oeconomia Copernicana*. 2018;9(4):731-753.
22. Mohammed AA, AL-Abrow H. The impact of empowering and transformational leadership on organizational performance and innovation: the mediating role of shared leadership and moderating role of organizational culture in the Iraqi healthcare sector. *Int J Organ Anal*. 2022.
23. Masood M, Afsar B. Transformational leadership and innovative work behavior among nursing staff. *Nurs Inq*. 2017;24(4):e12188.
24. Reuvers M, Van Engen ML, Vinkenburg CJ, Wilson-Evered E. Transformational leadership and innovative work behaviour: exploring the relevance of gender differences. *Creat Innov Manag*. 2008;17(3):227-244.
25. Saeed H, Som HM, Rosli Mahmood D, Hamid H. Hospital innovation and its relationship with transformational and ambidextrous leadership. *Cent Eur Manag J*. 2023;31(1):170-181.
26. Sanders K, Shipton H. The relationship between transformational leadership and innovative behaviour in a healthcare context: a team learning versus a cohesion perspective. *Eur J Int Manag*. 2012;6(1):83-100.
27. Wilson-Evered E, Härtel CE, Neale M. A longitudinal study of work group innovation: the importance of transformational leadership and morale. *In Advan Health Care Manag*. 2001;2:315-340.
28. Shakil RM, Memon MA, Ting H. Inclusive leadership and innovative work behaviour: the mediating role of job autonomy. *Qual Quant*. 2021. doi:10.1007/s11135-021-01102-0.
29. Zhang S, Liu Y, Li G, Zhang Z, Fa T. Chinese nurses' innovation capacity: the influence of inclusive leadership, empowering leadership and psychological empowerment. *J Nurs Manag*. 2022;30(6):1990-1999.
30. Al Wali J, Muthuveloo R, Teoh AP. Unravelling the nexus between creative self-efficacy, humble leadership, innovative work behaviour and job performance amongst physicians in public hospitals. *Asia-Pacific J Bus Admin*. 2022;14:706-726.
31. Yang K, Zhou L, Wang Z, Lin C, Luo Z. Humble leadership and innovative behaviour among Chinese nurses: the mediating role of work engagement. *J Nurs Manag*. 2019;27(8):1801-1808.

32. Kül S, Sönmez B. The effect of nurse managers' servant leadership on nurses' innovative behaviors and job performances. *Lead Org Dev J*. 2021;42(8):1168-1184.

33. Ahmed AK, Ata AA, Abd-Elhamid ZN. Relationship between the leadership behaviors, organizational climate, and innovative work behavior among nurses. *Am J Nurs Res*. 2019;7(5):870-878.

34. Kuknor SC, Bhattacharya S. Inclusive leadership: new age leadership to foster organizational inclusion. *Eur J Train Dev*. 2022;46(9):771-797.

35. Wang YX, Yang YJ, Wang Y, et al. The mediating role of inclusive leadership: work engagement and innovative behaviour among Chinese head nurses. *J Nurs Manag*. 2019;27(4):688-696.

36. Fu Q, Cherian J, Ahmad N, Scholz M, Samad S, Comite U. An inclusive leadership framework to foster employee creativity in the healthcare sector: the role of psychological safety and polychronicity. *Int J Environ Res Public Health*. 2022; 19(8):4519.

37. Labrague LJ, Al Sabei SD, AbuAlRub RF, Burney IA, Al Rawajfah O. Authentic leadership, nurse-assessed adverse patient events and quality of care: the mediating role of nurses' safety actions. *J Nurs Manag*. 2021;29(7):2152-2162.

38. Labrague LJ, Obeidat AA. Transformational leadership as a mediator between work-family conflict, nurse-reported patient safety outcomes, and job engagement. *J Nurs Scholarsh*. 2022; 54(4):493-500.

39. Labrague LJ, Nwafor CE, Tsaras K. Influence of toxic and transformational leadership practices on nurses' job satisfaction, job stress, absenteeism and turnover intention: a cross-sectional study. *J Nurs Manag*. 2020;28(5):1104-1113.

40. Tan AB, Van Dun DH, Wilderom CP. Innovative work behavior in Singapore evoked by transformational leaders through innovation support and readiness. *Creat Innov Manag*. 2021;30(4):697-712.

41. Jaiswal NK, Dhar RL. Transformational leadership, innovation climate, creative self-efficacy and employee creativity: a multilevel study. *Int J Hosp Manag*. 2015;51:30-41.

42. Sharif S, Tongkachok K, Akbar M, Iqbal K, Lodhi RN. Transformational leadership and innovative work behavior in three-star hotels: mediating role of leader-member exchange, knowledge sharing and voice behavior. *VINE J Inf Knowl Manag Syst*. 2021. doi:10.1108/VJIKMS-07-2021-0122.

43. Sheehan M, Garavan TN, Morley MJ. Transformational leadership and work unit innovation: a dyadic two-wave investigation. *J Bus Res*. 2020;109:399-412.

44. Northouse PG. *Leadership: Theory and Practice*. Thousand Oaks, CA: Sage Publications; 2021.

45. Karatepe OM, Aboramadan M, Dahleez KA. Does climate for creativity mediate the impact of servant leadership on management innovation and innovative behavior in the hotel industry? *Int J Contemp Hosp Manag*. 2020;32(8):2497-2517.

46. Faraz NA, Mughal MF, Ahmed F, Raza A, Iqbal MK. The impact of servant leadership on employees' innovative work behaviour-mediating role of psychological empowerment. *Int J Bus Manag Sci*. 2019;5(3):10-21.

47. Khan MM, Mubarik MS, Islam T. Leading the innovation: role of trust and job crafting as sequential mediators relating servant leadership and innovative work behavior. *Eur J Innov Manage*. 2021;24(5):1547-1568.

48. Su W, Lyu B, Chen H, Zhang Y. How does servant leadership influence employees' service innovative behavior? The roles of intrinsic motivation and identification with the leader. *Baltic J Manage*. 2020;15(4):571-586.

49. Lornudd C, Bergman D, Sandahl C, et al. A randomised study of leadership interventions for healthcare managers. *Leadersh Health Serv (Bradf Engl)*. 2016;29:358-376.