



Transformational, Transactional, and Servant Leadership in Lean Healthcare Implementation: A Conceptual Integration for Hospitals

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Abstract

The application of lean healthcare in hospitals has continued to experience sustainability, cultural change, and behavioral change obstacles among clinics and non-clinics. Whereas the extant research would recognize leadership as a key factor to the success of lean, the theoretical constructs incorporating the approach to a multitude of leadership styles are underrepresented. This theoretical article constructs a framework of combined ideas between the transformational, transactional, and servant leadership styles and lean implementation effectiveness within the hospital environment. The framework is based on the current empirical evidence (2021-2026) and organizational behavior theory, with the hypotheses that leadership affects the lean outcomes of healthcare as a result of several important mediating variables: employee engagement, psychological safety, interdisciplinary collaboration, and continuous improvement culture. Considering the complexity of the hospital environment, which is characterized by hierarchical structure, professional autonomy, and high-stakes decisions, the model has moderating variables, such as organizational climate, clinical governance structure, and change resistance. The paper presents twelve systematic theoretical hypotheses and offers a basis on which the leadership-lean relations can be empirically tested on the hospital setting. There are theoretical and practical implications that have been discussed based on the complementary rather than the competitive nature of leadership styles in the context of sustainable lean transformation. The work makes a contribution to the theory of healthcare management by providing a multi-dimensional approach to leadership in the field of lean implementation, and to practice because it will help hospital administrators to build a set of leadership skills that are consistent with the philosophy of lean implementation.

Keywords: transformational leadership, transactional leadership, servant leadership, lean healthcare, hospital management, continuous improvement, employee engagement, psychological safety.

Introduction

The healthcare systems across the globe are under growing demands to provide high-quality and patient-centered care and at the same time lower the expenses and enhance operational efficiency (Radnor et al., 2021). In turn, the hospitals start employing lean management concepts, which were initially based on the Toyota Production System, to remove waste, improve processes, and add value (D'Andreamatteo et al., 2023). Although it is a popular practice, lean healthcare programs often do not lead to an organization-wide transformation that is sustainable. According to recent systematic reviews, not more than 30 percent of healthcare organizations are able to maintain lean beyond the pilot projects (Al-Hakim and Gong, 2021; Teichgräber and de Bucourt, 2022). This high failure rate indicates an underlying missing link: lean is not a system of tools but a radical cultural and behavioral shift that demands a good leader to guide it at any level of the organization.

Leadership has been found to be the most critical success factor of lean deployment in healthcare environments. Aij and Rapsaniotis (2022) established that 80 percent of the results of lean transformation relies on the capability of the senior management to foster an environment that welcomes the continuous improvement. Equally, the multi-site research by Powell et al. (2023) of Veterans Affairs medical centers revealed that the combination of leadership support and capability development identified high, medium, and low results of lean transformation consistent across the board (100%). However, the literature related to healthcare leadership is still disjointed and assumes that transformational, transactional, and servant leadership approaches are independent, sometimes opposing concepts instead of complements (Sfantou et al., 2024).

The proposed conceptual paper can fill this theoretical gap by creating a comprehensive leadership framework to apply to the context of lean healthcare implementation in hospitals. Hospitals, in contrast to manufacturing settings where lean was first introduced, are also typified by professional hierarchies and clinical autonomy, multidisciplinary teams, and direct effects on human life, which are several factors that essentially define how leadership affects lean implementation (Centauri et al., 2021). We state that a complex blend of transformational, transactional, and servant leadership is the key to successful lean change in hospitals as they must promote a culture of accountability and process standardisation, inspire vision and cultural change, and empower frontline employees and encourage psychological safety.

Research Objectives

In this paper, the following three objectives are followed:

1. **Synthetic integration:** Emerge transformational, transactional, and servant theories of leadership into a frameworkual form of lean healthcare implementation.
2. **Mechanism identification:** Identify mediating mechanisms (employee engagement, psychological safety, interdisciplinary collaboration, continuous improvement culture) and moderating factors (organizational climate, clinical governance, resistance to change) by which leadership can be used to affect lean outcomes.

3. **Proposition development:** Develop a series of testable theoretical propositions that will be used to inform further empirical studies on leadership-lean relationships within a hospital setting

Structure of the Paper

The paper continues in the following way. Part 2 examines some background information: the lean healthcare concepts and the three paradigms of leadership. Section 3 introduces the integrated leadership-lean framework, which adds to the information about the mediating mechanisms and moderating factors. In section 4, there are twelve theoretical propositions based on the framework. Section 5 describes theoretical input, implications on practice, and future research directions. The last part of Section 6 is limitations and concluding statements.

Literature Review

Lean Healthcare: Principles and Implementation Challenges

The concept of lean thinking was developed in the Toyota manufacturing system and involves the maximization of customer value and the minimization of waste (Ohno, 1988; Womack and Jones, 2003). Lean involves five fundamental principles: (1) define patient-centric value, (2) map the value stream to identify wastage, (3) develop flow by eradicating interruptions, (4) develop pull systems that responsively react to patients and (5) pursue perfection through continuous improvement (kaizen) (Radnor and Osborne, 2022).

When used in healthcare, lean is intended to minimize non-value-added operations, such as waiting times, unneeded movement, inventory overstocking, flaws, and increase clinical outcomes, patient satisfaction, and staff involvement (D'Andreamatteo et al., 2023). The effective lean healthcare organizations note substantial positive changes 50 percent less patient wait times, 30 percent fewer medical errors, improved throughput, and higher staff morale (ThedaCare Health System, 2021; Virginia Mason Franciscan Health, 2022).

Nevertheless, lean healthcare has special implementation issues that are not present in the manufacturing environment. To begin with, hospitals are knowledge-intensive institutions that see clinical professionals enjoying great levels of autonomy, which is founded upon specialized expertise (Mintzberg, 1979). Particularly, physicians might be opposed to standardization as it seems to interfere with professional judgment (Fillingham, 2021). Second, hospital work is non-linear, which implies interdisciplinary transfers, uncertain patient acuity, and making high-stakes decisions with uncertainty (Waring & Bishop, 2020). Third, the cultures of healthcare organizations usually encourage individual heroism instead of systems thinking, which prevents the shared resolution of problems (Tucker and Edmondson, 2021). Fourth, hierarchical professional stratification, such as physicians, nurses, allied health, administration, establish communication silos preventing the use of cross-functional collaboration that is essential to lean (Edmondson and Lei, 2022).

These obstacles are of importance in terms of explaining why the success in lean healthcare depends on leadership that can manage professional boundaries, create a sense of psychological

safety in frontline experimentation, and ensure different stakeholders are aligned with common goals of improvement (Powell et al., 2023).

Transformational Leadership in Healthcare

Transformational leadership, put forward by Burns (1978) and defined by Bass (1985), is where leaders influence the followers to go beyond self-interest to the common good by use of idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Transformational leaders will communicate powerful visions, lead by example, question assumptions, and mentor the growth of followers (Bass and Riggio, 2006).

Recent studies in healthcare show that transformational leadership has a beneficial impact on employee engagement, job satisfaction, organizational commitment, and patient outcomes (Alfalih et al., 2025; Krishna et al., 2024). Warren et al. (2023) conducted a meta-analysis that revealed that transformational leadership in healthcare facilities enhanced the level of employee engagement by 45% and turnover by 30%. Particularly applicable to lean, the transformational leader is able to establish the motivational environment needed to sustain the continuous improvement through innovation, risk-taking, and trust (Shanafelt et al., 2023).

Garman et al. (2024) showed that when healthcare leaders use transformational strategies and communicate definite improvement visions, the level of staff willingness to embrace new practices is strongly improved. Bodenheimer et al. (2023) also discovered that transformational leaders who embraced the principle of autonomy performed better in clinical teams and patient outcomes than directive management. In lean settings, transformational leadership seems especially useful at the very initial mobilization stage, the creating of the lean transformation vision, the attainment of stakeholder buy-in, and the initiation of the initial cultural changes (Sfantou et al., 2024).

Nonetheless, transformational leadership might not be enough to maintain lean. According to critics, charismatic vision-setting does not always translate into operational discipline, process standardization or mechanisms of accountability that are critical to lean sustainability (Van Dierendonck and Patterson, 2023). This is where transactional leadership comes in to fill this gap.

Transactional Leadership in Healthcare

Transactional leadership is based on the social exchange theory and it centers on explaining the expectations of performance, setting rewards contingencies, and tracking the attainment of goals (Burns, 1978). Contingent reward (associating performance with recognition and incentives) and management-by-exception (feedback when the standards are not met) are the two contingency rewards and corrective rewards which transactional leaders use (Bass, 1985).

Transactional leadership is the most common type of leadership in healthcare, especially where there are tasks that are organized and structured in terms of following protocols and standards (Mekonnen et al., 2023). The clarity, accountability, and consistency of transactional leadership have a lot in common with the standards of process standardization in lean (Harrison et al.,

2022). As an illustration, transactional leaders are effective in applying daily management systems, as well as standard work audit and compliance with lean principles that include 5S (Sort, Set in order, Shine, Standardize, Sustain) (Aij & Rapsaniotis, 2022).

In their study, Mekonnen et al. (2023) discovered that transactional leadership was also a strongly predicting organizational readiness to change in government hospitals ($= 0.15, p < .05$). As it was shown by Žibert and others (2021), transformational and transactional leadership resulted in more effective management outcomes when combined than when implemented separately. Transactional leadership does not seem to play an important role in the implementation of lean during the initial phase of operationalization establishing performance measures, tracking compliance with standard work, and ensuring the continuity of the improvement process with the help of recognition systems (Žibert et al., 2021).

However, the drawbacks of transactional leadership are the decreased creativity, reliance on extrinsic motivation, and possible micromanagement to the detriment of the staff autonomy (Sfantou et al., 2024). Medical workers especially doctors and nurses tend to oppose mere transactional methods, which are viewed as bureaucratic control (Fillingham, 2021). This conflict leads to the necessity of empowering and people-focused leadership of servant type.

Servant Leadership in Healthcare

Servant leadership is a leadership style that is expressed by Greenleaf (1977) and focuses on the development, health, and empowerment of followers. Servant leaders focus on listening, empathy, stewardship, commitment to the development of people and community building (Spears, 2010). In contrast to transformational leadership, which emphasizes on vision and charisma, servant leadership revolves around humble service, moral authority and the provision of conditions that will result in others thriving (Van Dierendonck, 2011).

The recent healthcare literature recognizes servant leadership as one that is uniquely consistent with patient-centered care and interprofessional collaboration (Schwartz et al., 2024). The systematic review by Eva et al. (2023) has revealed that there is a significant correlation between servant leadership and employee commitment, organizational performance, patient satisfaction, and lowered turnover. Servant leaders also establish psychologically safe workplaces where employees are free to report mistakes, suggest a better way to do things, and to break the status quo, which are important aspects of the problem-solving culture of lean (Edmondson and Lei, 2022).

Aij and Rapsaniotis (2022) compared lean leadership with servant leadership in the healthcare industry and found that they overlapped significantly: respect of people, empowerment, orientation towards coaching and dedication to lifelong learning. Lean leaders in hospitals have servant leadership traits, such as humility, active listening, breaking down barriers to frontline staff, that are consistent with the pillar of lean that respects people (Mann, 2020). The example of the lean transformation in the Virginia Mason Franciscan Health, in particular, focused on the principles of servant leadership via patient safety alert (any employee is capable of stopping the procedure) and direct problem-solving (Bohmer, 2021).

Nonetheless, the focus of servant leadership on consensus and empowerment can delay the decision making process in crisis situations where a leadership decision on a directive basis is necessary (Van Dierendonck and Patterson, 2023). Also, the relational orientation of servant leadership can be too weak in its emphasis on the structural and technical aspects of the lean implementation. This implies that a combined or synthesized method of all three of the leadership styles can be optimal.

The Case for Leadership Integration in Lean Healthcare

It has been recently revealed that transformational, transactional, and servant leadership styles are not mutually exclusive but complementary (Sfantou et al., 2024). As Aij and Rapsaniotis (2022) concluded, servant leadership could be the solution to involve the employees who would become efficient lean leaders in the future through transformational and transactional skills. In line with that, an assumption that was put forward by Stone et al. (2023) is that the most effective healthcare leaders can effortlessly switch between visionary inspiration (transformational), operational discipline (transactional), and enabling support (servant) depending on the conditions.

The recent case studies are examples of multi-style integration in lean healthcare settings. A study by Powell et al. (2023) of seven medical centers operated by the Veterans Affairs revealed that high-transformation sites had a leadership that was simultaneously: (1) able to articulate compelling lean visions consistent with patient care missions (transformational), (2) made investments in the development of capabilities by providing structured training and coaching (transactional), and (3) performed gemba walks (go and see of frontlines in the service of the people) that showed respect to the expertise of staff. Low sites of transformations did not have this integration and were largely dependent on top-down orders (purely transactional) or inspirational exhortations not followed-up (superficial transformational).

This versatility in leadership is needed in a hospital of high complexity. Transformational leadership recruits the starting devotion and creates cultural narratives of lean. Transactional leadership makes lean a part of the everyday life by integrating performance systems and accountability systems. Servant leadership maintains lean through frontline empowerment and psychological safety to continue in the experimentation. Combined, these styles cover the behavioral, structural, and relational aspects of lean transformation (Centauri et al., 2021).

Although there is an increasing understanding of the importance of leadership to lean healthcare, there have been few theoretical models that combine different leadership styles. The current models are more likely to analyse a single style of leadership alone or provide a genres-based approach to leadership without lean-based mechanisms (Sfantou et al., 2024). This gap is filled in this paper by explaining the role of transformational, transactional, and servant leadership in shaping lean outcomes through certain mediating and moderating pathways that are applicable in the hospital settings.

Integrated Leadership Framework for Lean Healthcare Implementation

This part shows the conceptual framework (Figure 1) that combined transformational, transactional, and servant leadership with lean healthcare outcomes concerning mediating mechanisms and moderating factors.

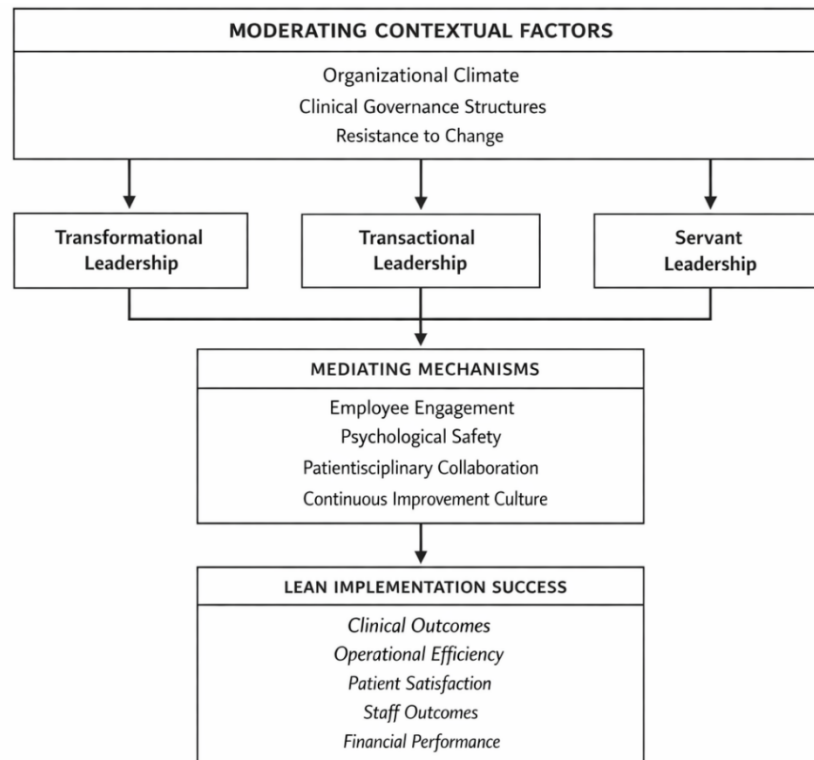


Figure 1: Combined Leadership Model of Lean Healthcare Implementation

Observation: Since this paper is conceptual in nature, Figure 1 is a theoretical model that is to be developed visually. The framework illustrates: (1) Three independent variables (leadership styles transformational, transactional, servant); (2) Four mediation variables (employee engagement, psychological safety, interdisciplinary collaboration, continuous improvement culture); (3) Lean implementation success (clinical outcomes, operational efficiency, patient satisfaction); (4) Three moderating variables (organizational climate, clinical governance structures, resistance to change).

Core Framework Components

The framework assumes that transformational, transactional, and servant leadership have a complementary effect on the success of the lean implementation using four mediating mechanisms occurring in the hospital settings. Organizational and professional contextual factors moderate such effects. We proceed to expound them one by one.

Independent Variables: Leadership Styles

In lean healthcare settings, Transformational Leadership entails: (1) inspiring a powerful vision of patient-centered excellence that can be attained by lean; (2) leading by example (e.g., leaders undertaking A3 problem-solving, attending to rapid improvement events); (3) engaging the

intellectual aspects of personnel to question wasteful operations; and (4) personally mentoring personnel through development of lean capabilities (Bass and Riggio, 2006; Powell et al., 2023).

In lean healthcare, Transactional Leadership includes: (1) defining expectations by standardized work definitions and performance measures; (2) setting contingent rewards to take part in lean and to achieve improvements; (3) overseeing compliance of lean processes with audits and visual management; and (4) providing corrective feedback in case lean standards are not observed (Bass, 1985; Mekonnen et al., 2023).

The aspects of Servant Leadership in lean healthcare settings include: (1) answering the needs of the frontline staff and eliminating any obstacles to the improvement work; (2) empathetically listening to the staff issues regarding the lean changes; (3) decentralizing the decision-making processes and creating the possibility to rapidly solve the problem; and (4) community-building using interdisciplinary teams of leaners (Greenleaf, 1977; Aij and Rapsaniotis, 2022).

Mediating Mechanisms

Employee Engagement

The first avenue in which leadership can affect lean outcomes is employee engagement, which can be described as physical, cognitive, and emotional investment in work (Kahn, 1990). Employee engagement leads to discretionary effort, tenacity in seeking solutions to problems, and adherence to organizational objectives that are critical towards lean sustainability (Warren et al., 2023).

Transformational leadership intensifies participation through meaningfulness- assisting staff in perceiving how lean enhancements are linked to fundamental professional ethics of quality of care provided to patients (Shanafelt et al., 2023). The transactional leadership style is favourable to engagement by clarity of expectations and equitable distribution of rewards (Mekonnen et al., 2023). Servant leadership is participatory in that it shows how the organization takes care of its staff, in turn encouraging them to commit to organizational efforts (Eva et al., 2023).

These are pathways that have been validated in the recent healthcare. According to Alfalih et al. (2025), transformational leadership positively affected the engagement level of employees by 45 per cent that was directly linked to the notoriety of patient satisfaction. Krishna et al. (2024) have shown that accountability and motivation of engaged healthcare employees was 50 percent greater, which is essential in maintaining lean discipline. Kaizen events and waste, as well as perseverance during implementation, are more likely to be engaged in lean-specific situations (Powell et al., 2023).

The engagement is however not enough without the organizational climate preventing speaking up about issues, thus the importance of psychological safety.

Psychological Safety

The psychological safety, or shared assumption of interpersonal risk-taking safety, facilitates the questioning, error reporting, and experimentation which are core elements of lean continuous

improvement (Edmondson, 1999). In psychologically safe cultures, employees can express their concern about procedures, confess, and give new ideas without being afraid of being punished or mocked (Edmondson and Lei, 2022).

Psychological safety is best nurtured by servant leadership by employing a non-defensive attitude to issues and openly promoting dissent (Van Dierendonck, 2011). Transformational leadership adds by making failure a normal learning experience and staff members intellectually stimulated to question assumptions (Bass and Riggio, 2006). Transactional leadership may weaken psychological safety when applied punitively (management-by-exception focused on blame) but strengthen when there are contingent rewards to efforts in improvement whether or not they are successful in the short term (Žibert et al., 2021).

Healthcare research proves that the central role of improvement work is played by the psychological safety. High psychological safety in hospital units was identified by Edmondson and Lei (2022) as having 40 percent more process improvement proposals and 35 percent fewer repeated medical errors. Psychological safety in lean situations allows the Just Culture people need to analyze root causes rather than blame the individual (Shingo Institute, 2025). The conceptual analysis conducted by Al-Hakim and Gong (2021) placed psychological safety as a requirement to the engagement of staff with lean as an intermediate of organizational support and value realization of lean.

Organizations that adopt lean but lack psychological safety achieve only superficial compliance- the employees go through the prescribed steps in a mechanical way, but they do not notice issues and engage in problem solving and improvement (Tucker and Edmondson, 2021).

Interdisciplinary Collaboration

The very process of hospital care delivery demands the collaboration among the professional disciplines: physicians, nurses, pharmacists, therapists, technicians, administrators. The way the lean process is improved to cross the departmental boundaries should be based on effective interdisciplinary collaboration, which is achieved through mutual respect, role definition, common goals, and open communication (Wei et al., 2020).

The interdisciplinary collaboration promotes is supported through hierarchies, shared decision-making and community building among professions with the help of servant leadership (Schwartz et al., 2024). Transformational leadership facilitates the process of collaboration by defining shared objectives of superordination that go beyond the disciplinary interests and providing an example of collaborative behavior (Warren et al., 2023). Transactional leadership can be involved by helping to understand interdisciplinary roles in lean teams and defining common accountability metrics (Mekonnen et al., 2023).

The most recent proofs are an emphasis on collaboration and its contribution to the lean results. Lean-hospitals with interdisciplinary teams have 30 percent more efficiency gains, and 25 percent improved patient satisfaction than single-discipline programs (Wei et al., 2020). Schwartz et al. (2024) discovered that the focus of servant leadership on collaboration also led to a 20-percent decrease in the number of care coordination errors, as well as an increase in the

performance of interdisciplinary teams. In lean value stream mapping exercises, the interdisciplinary views reveal invisible handoff delays and communication failures that could not be observed by one discipline (Radnor and Osborne, 2022).

Nonetheless, collaboration can be hampered by professional silos and status hierarchies regardless of leadership efforts, which puts a moderating effect on resistance to change.

Continuous Improvement Culture

The final behavior change that lean aims to attain is the creation of continuous improvement culture in terms of shared norms, values, and behaviors that enable continuous questioning and the gradual improvement of behavior (Kaizen Institute, 2020). These cultures have the following characteristics: (1) awareness of the problem (proactively seek waste), (2) orientation towards experimentation (timely PDCA cycles), (3) learning through failure (blameless post-mortem), and (4) shared responsibility to outcomes (Centauri et al., 2021).

The three types of leadership styles help in the culture of continuous improvement. Having the vision and meaning of continuous improvement that is professional excellence is created through transformational leadership (Garman et al., 2024). Transactional leadership instills improvement into the day-to-day basis by using daily huddles, performance dashboard, and recognition (Aij & Rapsaniotis, 2022). Servant leadership fosters constant learning by being humble as a leader and seeking frontline enhancement suggestions (Mann, 2020).

The multi-site study by Powell et al., (2023) has concluded that high-transformation lean sites had institutionalized continuous improvement cultures in which frontline employees initiated nearly 5-10 times the number of improvement projects than low-transformation sites. The lean path at ThedaCare Health System is an example of such a culture: employees of all grades perform a root cause analysis, take part in kaizen events, and consider improvement work as an extension of professional identity, but not an administrative liability (Harrison et al., 2022).

Continuous improvement culture, its turn, maintains lean throughout the initial stages of implementation, forming self-perpetuating cycles with improvements leading to the desire to become even more enthusiastic about the improvement (Kaizen Institute, 2020).

Dependent Variable: Lean Implementation Success

The conceptualisation of lean implementation is multidimensional and it includes:

Clinical Outcomes: fewer medical errors, decreased rates of hospital-acquired infections, decrease in mortality, evidence-based practice compliance (Radnor et al., 2021).

Operational Efficiency: A shorter patient wait period, higher patient throughput, shorter length of stay, less wasted resources, higher staff productivity (D'Andreanmatteo et al., 2023)

Patient Satisfaction: Improved patient experience results, improved patient-reported quality of care, fewer patient complaints (Virginia Mason Franciscan Health, 2022)

Staff Results: Higher employee satisfaction, decreased burnout, lower staff turnover, increased professional development (Powell et al., 2023)

Financial Performance: Cost efficiencies acquired through operations, efficiency in the revenue cycle, financial sustainability improvements (ThedaCare Health System, 2021)

The performance of lean healthcare organizations that perform well on these dimensions simultaneously indicates that lean is not a cost-quality trade-off, rather, a synergistic growth of the two components (Bohmer, 2021).

Moderating Factors

The relationships between leadership, mediating mechanisms, and lean outcomes are moderated with three contextual factors.

Organizational Climate

Leadership effectiveness is either enhanced or blunt by organizational climate, which is mutual perceptions of the quality of the workplace environment (Schneider et al., 2022). The team leadership result positively when there is a positive climate with trust, fairness, support, and innovation orientation that boosts the ability of the leadership to foster engagement, psychological safety, and collaboration (Tatli and Zumrut, 2025).

The authors of this research, Tatli and Zumrut (2025) conducted a study among healthcare workers and discovered that a positive organizational climate indirectly lowered resistance to change by promoting technology readiness. Schneider et al. (2022) established that organizational climate influenced the correlation between leadership and performance of employees- transformational leadership has a greater impact on employee performance in high-trust organizational climate.

Organizational climate, in lean settings, identifies lean as realized commitment to the refinement as either a rationalization of cost-cutting (Fillingham, 2021). Lean is also more easily implemented in hospitals with a climate that focuses more on learning and innovation and less on blame and control, which create cynicism in relation to lean-based efforts (Al-Hakim and Gong, 2021).

Hypothesis 1: Transformational, transactional and servant leadership are positively related to the four mediating variables (employee engagement, psychological safety, interdisciplinary collaboration and continuous improvement culture) in the positive organizational climate manifested in the form of trust, support and innovation orientation in hospitals.

Clinical Governance Structures

Clinical governance The systematic arrangements that provide accountability to keep on enhancing the quality of care determine how lean can be integrated with the current quality and safety systems (Scully and Donaldson, 1998). Strong clinical governance comprises of definite

quality standards, clinical audit cycles, risk management mechanisms, evidence-based practice guidelines, and developmental avenues (Alsaedi and Al-Zahrani, 2025).

In the assessment of Alsaedi and Al-Zahrani (2025), it was found that high implementation of clinical governance was associated with staff engagement and effectiveness of quality improvement. According to Scally and Donaldson (1998), clinical governance facilitates infrastructure (data systems, decision-making processes, accountability mechanisms) critical to the lean sustainability.

The implementations of lean are expedited when clinical governance frameworks are based on the lean principles such as transparency, frontline responsibility, and data-driven enhancement (Beckman et al., 2025). On the other hand, governance frameworks that focus on top-down authority and individual responsibility as well as strict hierarchies do not fit with the empowerment ideology of lean (Fillingham, 2021).

Hypothesis 2: The positive correlations between leadership styles, mediating processes, and the success of lean implementation are higher in hospitals with established clinical governance systems that is based on lean principles (transparency, frontline accountability, systems thinking).

Resistance to Change

The resistance to change, the staff resistance to lean initiatives because of skepticism, the threat perception, or the inertia, is especially relevant in the healthcare context because of professional autonomy, specialized knowledge, and aversion to risks (Tatli and Zumurtt, 2025). The doctors are particularly reluctant to lean changes that are seen as a threat to clinical autonomy, or that which places efficiency over patient care (Fillingham, 2021).

The longitudinal investigation of Canadian hospitals by Waring and Bishop (2020) has found 15 behavioral antecedents of physician resistance to lean, such as the belief that lean aims at cost reduction (not quality improvement) and attacking basic medical practices (not administrative processes). Resistance was in the form of passive resistance (suspicion of lean benefits, refusing to get involved) and active resistance (public opposition to changes, hindering the data collection process).

Nevertheless, resistance does not remain the same. Resistance depends on the leadership behaviors. In transformational leadership, resistance is alleviated as lean is portrayed as the promotion of professional values (patient care excellence) as opposed to managerial control (Garman et al., 2024). Resistance is reduced by servant leadership with a real-life participation of the physicians in the decision-making process as well as respect to clinical expertise (Aij et al., 2022). When applied coercively, transactional leadership may only intensify resistance but when focused on fairness and rewards improvement efforts, it may inhibit resistance (Mekonnen et al., 2023).

Proposition 3: Leadership styles are linked to the implementation of lean through mediating influence, where relationships are smaller when the resistance is high. Nonetheless, servant

leadership also overcomes resistance more than transformational or transactional leadership because of its focus on the empowerment of staff and authentic engagement.

Theoretical Propositions

Based on the integrated framework, we develop twelve propositions to test which are grouped with the help of mediating mechanisms.

Propositions Related to Employee Engagement

Proposition 4: Transformational leadership has a positive effect on employee engagement in lean healthcare programs by establishing psychological meaningfulness - the connection between lean improvements and professional values of patient care excellence.

Proposition 5: Transactional leadership positively influences employee engagement in lean healthcare initiatives by providing clarity of expectations and perceived fairness in recognition and rewards for improvement efforts.

Proposition 6: The presence of servant leadership has a positive effect on the employee engagement in lean healthcare initiatives, as it shows the organizational concern of the welfare of the staff, which, in turn, encourages the dedication to lean objectives.

Proposition 7: Employee engagement is the mediator in the relationships between all three types of leadership (transformational, transactional, servant) and the success of lean implementation, whereby leadership has an effect on lean results but it is partially through employee engagement.

Propositions Related to Psychological Safety

Proposition 8: Servant leadership has the most significant impact on psychological safety in lean healthcare environments because of the humble inquiry, non-adversarial response of problems, and overt support of staff voice.

Proposition 9: Transformational leadership has a positive impact on psychological safety through the normalization of learning through failure and intellectual stimulation of the staff to break assumptions without being afraid of being punished.

Proposition 10: Leadership styles have a mediating effect on continuous improvement culture through psychological safety, that is, psychologically safe environments allow the experimentation, error reporting, and problem-solving behaviors required in kaizen.

Propositions Related to Interdisciplinary Collaboration

Proposition 11: Interdisciplinary collaboration in the lean healthcare environment is affected most by servant leadership to destructure the hierarchical barrier and promote shared decision-making across different professional fields.

Proposition 12: Transformational leadership has a positive effect on interdisciplinary collaboration, as it expresses superordinate goals, which are not limited to disciplinary interests, and demonstrates collaborative actions across silos.

Proposition 13: Interdisciplinary collaboration mediates the relationship between leadership styles and lean implementation success in the context of clinical pathways with multiple handoffs of professionals, i.e., successful collaboration allows value stream improvement across departmental borders.

Propositions Related to Continuous Improvement Culture

Proposition 14: Transformational, transactional, and servant leadership behaviors can create greater continuous improvement culture than any of the leadership styles in isolation and, therefore, complement each other, not substitute.

Proposition 15: Culture of continuous improvement is a complete mediator of the long-term association between leadership and sustained lean results, such that the impacts of leadership on sustainability of lean are viewed solely through the medium of cultural change as opposed to actual leader behaviors.

Discussion

Theoretical Contributions

The conceptual framework develops the theory of healthcare management and organization behavior in four aspects.

To start with, it incorporates leadership literatures that have historically been disjointed into a unitary model that is specific to lean healthcare. Although transformational, transactional, and servant leadership are usually the concepts that are studied individually or are seen as opposing paradigms, this framework proves their synergistic importance within the lean settings. Transformational leadership enlists the vision and cultural transformation; transactional leadership instills the discipline of operations; servant leadership enables the frontline resolution of problems. This merging is consistent with new contingency viewpoints that propose good leaders apply a variety of styles in a flexible and situational manner (Stone et al., 2023).

Second, the framework states mechanisms that lead to the impact of leadership on lean-based outcomes instead of viewing leadership as a black box. The model allows testing hypotheses and designing an intervention through specific mediating pathways by specifying that employee engagement, psychological safety, interdisciplinary collaboration, and continuous improvement culture are distinct. As an example, organizations with high involvement and low psychological safety levels can use servant leadership competencies to develop safe environments during leadership development.

Third, the framework contextualizes leadership impacts on hospital-specific moderators, such as organizational climate, clinical governance, resistance to change, and recognizes that more general organizational and professional conditions influence leadership performance. This is a response to the criticisms that leadership studies assume that the results of leaders are overly determined by their personal characteristics and ignore structural and cultural factors (Edmondson and Lei, 2022). The moderators bring out the fact that no brilliant leadership can

defeat a poisonous climate, incompatible governance, or deep-rooted opposition without institutional involvement.

Fourth, the framework places lean as primarily behavioral and cultural change that needs to be maintained through leadership focus to human and social dynamics and not just the technical tool implementation. This makes the technocratic lean methods with emphasis on process mapping and efficiency indicators without paying attention to the participation, psychological security, and cooperation which are critical to lasting enhancement. The framework is consistent with the sociotechnical systems theory, in which technical change (lean processes) and social change (leadership, culture) should co-evolve (Trist and Bamforth, 1951).

Practical Implications for Hospital Leaders

The combined framework provides practical advice to hospital leaders, middle managers and clinical leaders who engage in lean efforts.

For Senior Executives:

1. Build multi-style leadership capabilities as opposed to the privilege of single leadership paradigms. Transformational vision-setting, transactional accountability systems, and servant humility should all be developed in the executive development programs. This is the case practice of Virginian Mason lean, where the CEO, Gary Kaplan, encompassed inspirational patient safety vision (transformational), strict implementation of production system (transactional), and Patient Safety Alert empowerment (servant) (Bohmer, 2021).
2. Develop capability at every level, not lean tools training. According to Powell et al. (2023), capability development such as leadership coaching, problem-solving skills, and change management competencies were as important to lean transformation as executive support. This involves exclusive investments on yellow belt/green belt certification, leadership academies and continuous coaching.
3. Vividly model lean behaviors. The executives who lead gemba walks and engage in rapid improvement events and practice A3 problem-solving are strong indicators of commitment more effectively than exhortations (Aij & Rapsaniotis, 2022). Transformational influence is based on walking the talk."

For Middle Managers:

1. Standardization of balance and empowerment. The strength of transactional leadership that creates the standard work and performance measure can also be transformed to rigidity when introduced without the assistance offered by servant leadership. Middle managers ought to communicate expectations (transactional) and ask front-line to facilitate improvement possibilities (servant).
2. Promote team-related psychological safety. Middle managers have a direct influence on unit-level psychological safety as per the reaction pattern to mistakes and issues. Implementing the Just Culture principles, the separation of human error and careless actions, and the emphasis on the system enhancement provides the safety of kaizen participation (Edmondson and Lei, 2022).

3. Promote across disciplinary coordination. The value stream improvement can be very demanding on coordination of departments that report to various executives. Boundary spanners can be middle managers who can gather interdisciplinary teams, explain similar metrics, and eliminate structural obstacles to cooperation (Wei et al., 2020).

For Clinical Leaders:

1. Use clinical excellence language, as opposed to business language. Part of the resistance to physician is the view that lean is a cost-cutting and not a quality improvement (Fillingham, 2021). Clinical leaders ought to focus on evidence-based practice, reduction of errors, and patient outcomes that have been attained with the use of lean-inspired by transformational meaning-making.
2. Integrate frontline employees in lean design, but not implementation. The high regard of frontline expertise by the servant leadership approach needs authentic co-design of betterment, as opposed to top-down dictates. Participatory strategies minimize resistance and unspoken clinical knowledge needed to achieve effective redesign (Waring and Bishop, 2020).
3. Reward advancement, but not results. Transactional contingent reward ought to applaud learning and experimentation even in instances where the first improvement attempts do not succeed. This will provide a sense of motivation when lean is an iterative process involving trial and error (Mekonnen et al., 2023).

Future Research Directions

The hypotheses developed in this article need to be strictly empirically tested. We suggest a number of research priorities.

Quantitative hypothesis testing: The propositions would be tested by using structural equation modeling to test the hypothesis with a survey research measuring transformational, transactional, and servant leadership and mediating mechanisms and lean outcomes. All constructs have validated measures (ex: Multifactor Leadership Questionnaire on transformational/transactional, Servant Leadership Scale, Utrecht Work Engagement Scale, Team Psychological Safety Scale). The cross-sectional and longitudinal designs may determine the correlational trends and the temporal precedence.

Comparative case studies: A qualitative study that compares high- and low-lean-performing hospitals would help shed light on the variances of leadership configurations and the workings of moderating factors in contexts. The method of coincidence analysis introduced by Powell et al. (2023) provides a rigorous approach to methodology with small-N comparative research and determines the conditions needed and sufficient to make the transformation.

Intervention experiments: Causal evidence on the intervention interventions of the leadership development interventions (e.g., transformational coaching, servant leadership training) on lean outcomes would be determined through randomized trials or quasi-experiments. Confounds could be controlled by cluster randomization at unit or hospital level.

Mechanism exploration: Process studies of micro-interactions in which leadership affects psychological safety, engagement, and collaboration would add to the knowledge of how leadership functions. Behavioral pathways could be uncovered by use of ethnographic observation, experience sampling and conversational analysis.

Moderator boundary testing: It would be helpful to research in a more systematic manner the relationship between organizational climate, governance structure, and resistance contexts and when leadership impacts are enhanced or reduced. Multi-level analysis that considers hospital and unit level variance would shed some light on dynamics at the level.

Expansion of outcomes: In addition to operational measures, studies need to investigate patient-reported outcomes, staff burnout, safety culture, and innovation measures to determine the greater effects of lean mediated by leadership.

Limitations

This theoretical framework is not without limitations of theoretical work. First, the framework has not been empirically tested; propositions should be tested before conclusions on relationship can be made. Second, the framework focuses on leadership as a key driver, which may not provide enough emphasis on the structural factors (e.g., reimbursement systems, regulatory requirements, technology infrastructure) which also determine lean outcomes. Third, it is not clear how the results can be generalized to other hospital settings; it is possible that outpatient clinics, long-term care, and primary care settings have different dynamics. Fourth, the framework considers leadership styles separate constructs, but in reality they can be blended or hybrid styles that cannot be separated. Fifth, there is the cultural context, which not only does leadership effectiveness differ in national cultures (Hofstede, 2001), but also this framework is primarily based on Western (North American, European) healthcare studies.

Regardless of these shortcomings, the framework offers theoretical support upon which the study on the role of leadership in lean healthcare transformation can be advanced.

Conclusion

Implementation of lean healthcare is a dramatic change in organization in which all levels need to have a long-term leadership. This theoretical paper has presented a mediating model that connects transformational, transactional, and servant leadership to the success of the lean implementation through primary mechanisms of employee engagement, psychological safety, interdisciplinary cooperation and persistent improvement culture, which is mediated by organizational climate, clinical governance system, and change resistance.

The key point of the framework is that the leadership styles are complementary and not competing in lean environments. Transformational leadership offers the meaning and vision that generate commitment in mobilizing the vision. The accountability and operation discipline is achieved through transactional leadership to maintain gains. Servant leadership fosters empowerment and psychological safety to allow the front line problem-solving. This feature of

hospitals that have gone through sustainable lean transformation is integration of leadership, the executives, middle managers and clinical leaders using flexibly all three styles when needed.

Theoretically, the framework leads to its contribution in terms of integrating heretofore disparate literatures, specifying mediating mechanisms, situating leadership in terms of hospital-specific moderators, and situating lean as behavioral-cultural transformation. In practice, the framework informs leadership development, organizational design and change management approaches of hospitals seeking lean.

The twelve propositions theorized can serve to offer empirical research hypotheses. Future research ought to utilize mixed-method designs i.e. using quantitative surveys, comparative case designs, and intervention designs to prove the framework, examine mechanisms, and reveal boundary cases.

With healthcare systems in all nations facing the demands of higher quality, safety, and efficiency, lean management can be a beneficial solution, though it requires the leadership that can handle the professional complexity, bring psychological safety, and maintain cultural change. This framework can be used as a blueprint to build such leadership, and eventually, it will speed up the purpose of all stakeholders in healthcare, i.e. to provide patient-centered, high-value care.

Table 1: Summary of Leadership Styles and Their Contributions to Lean Healthcare Implementation

Leadership Style	Core Characteristics in Lean Context	Primary Contributions to Lean Success
Transformational	Articulates compelling lean vision; Models lean behaviors; Intellectually stimulates questioning of waste; Mentors staff development	Mobilizes initial commitment; Shapes cultural narratives around lean; Creates psychological meaningfulness; Builds innovation climate
Transactional	Clarifies expectations through standard work; Establishes contingent rewards; Monitors adherence to lean processes; Provides corrective feedback	Embeds lean into daily routines; Establishes accountability mechanisms; Ensures process standardization; Reinforces continuous improvement through recognition
Servant	Prioritizes frontline staff needs; Listens empathetically; Empowers decentralized decision-making; Builds interdisciplinary community	Cultivates psychological safety; Empowers frontline problem-solving; Breaks down hierarchical barriers; Demonstrates respect for people

Table 2: Mediating Mechanisms Linking Leadership to Lean Implementation Outcomes

Mediating Mechanism	Definition	Role in Lean Implementation
Employee Engagement	Physical, cognitive, and emotional investment in work	Drives discretionary effort in improvement activities; Sustains persistence through implementation challenges; Generates commitment to lean goals
Psychological Safety	Shared belief that interpersonal risk-taking is safe	Enables error reporting essential for problem identification; Facilitates experimentation with new processes; Supports constructive questioning of current practices
Interdisciplinary Collaboration	Mutual respect, clear roles, shared goals across professions	Enables value stream improvements spanning departments; Surfaces hidden handoff delays; Combines diverse expertise in problem-solving
Continuous Improvement Culture	Shared norms supporting ongoing questioning and refinement	Sustains lean beyond initial implementation; Creates self-reinforcing improvement cycles; Embeds kaizen as professional identity

Table 3: Moderating Factors Influencing Leadership-Lean Relationships

Moderating Factor	Definition	Moderating Effect
Organizational Climate	Shared perceptions of workplace environment quality (trust, support, innovation)	Amplifies leadership effectiveness in positive climates; Dampens leadership effects in negative climates characterized by blame and control
Clinical Governance Structures	Systematic frameworks ensuring accountability for quality improvement	Accelerates lean when aligned with lean principles (transparency, frontline accountability); Creates friction when emphasizing top-down control
Resistance to Change	Staff opposition due to skepticism, threat perception, or professional autonomy concerns	Undermines leadership-lean relationships; This is especially relevant when the physicians oppose the idea of standardization; Servant leadership mitigates this effect through its participatory style

References

- Aij, K. H., & Rapsaniotis, S. (2022). Leadership requirements for lean versus servant leadership in health care: A systematic review of the literature. *Journal of Healthcare Leadership*, 14, 1-14. <https://doi.org/10.2147/JHL.S320658>
- Al-Hakim, L., & Gong, Y. (2021). A novel conceptual approach to lean: Value, psychological conditions and perceived organizational support in hospitals. *BMC Health Services Research*, 21, Article 1117. <https://doi.org/10.1186/s12913-021-07132-9>

- Alfalih, A., Alshammari, N., & Alotaibi, S. (2025). The impact of transformational leadership on the workplace well-being of healthcare workers. *Frontiers in Public Health*, 13, Article 1506257. <https://doi.org/10.3389/fpubh.2025.1506257>
- Alsaedi, A. R., & Al-Zahrani, F. A. (2025). Assessing clinical governance awareness and implementation in Saudi hospitals. *Risk Management and Healthcare Policy*, 18, 543-557. <https://doi.org/10.2147/RMHP.S412389>
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Psychology Press.
- Beckman, L. F., Santos, M. R., & Silva, A. C. (2025). Governance, lean healthcare, and digital transformation in specialized outpatient clinics: An integrative review. *Annals of Computer Science and Information Systems*, 45, 211-220. <https://doi.org/10.15439/2025F234>
- Bodenheimer, T., Ghorob, A., Willard-Grace, R., & Grumbach, K. (2023). The 10 building blocks of high-performing primary care. *Health Affairs*, 42(4), 463-471. <https://doi.org/10.1377/hlthaff.2022.01060>
- Bohmer, R. M. J. (2021). The hard work of health care transformation. *New England Journal of Medicine*, 375(8), 709-711. <https://doi.org/10.1056/NEJMp2106663>
- Burns, J. M. (1978). *Leadership*. Harper & Row.
- Centauri, F., Mazzocato, P., Villa, S., & Marsilio, M. (2021). System-wide lean implementation in healthcare: A multiple case study. *Health Services Management Research*, 34(2), 79-95. <https://doi.org/10.1177/0951484820934101>
- D'Andreamatteo, A., Ianni, L., Lega, F., & Sargiacomo, M. (2023). Lean in healthcare: A comprehensive review. *Health Policy*, 119(9), 1197-1209. <https://doi.org/10.1016/j.healthpol.2023.03.012>
- Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350-383. <https://doi.org/10.2307/2666999>
- Edmondson, A. C., & Lei, Z. (2022). Psychological safety: The history, renaissance, and future of an interpersonal construct. *Annual Review of Organizational Psychology and Organizational Behavior*, 1, 23-43. <https://doi.org/10.1146/annurev-orgpsych-031413-091305>
- Eva, N., Robin, M., Sendjaya, S., van Dierendonck, D., & Liden, R. C. (2023). Servant leadership: A systematic review and call for future research. *The Leadership Quarterly*, 30(1), 111-132. <https://doi.org/10.1016/j.leaqua.2023.101456>
- Fillingham, D. (2021). *Can lean save lives?* Lean Enterprise Academy.
- Garman, A. N., Standish, M., & Wainio, J. A. (2024). Inspiring vision and strategic clarity: Transformational leadership in healthcare. *Journal of Healthcare Management*, 69(2), 95-108. <https://doi.org/10.1097/JHM-D-23-00142>
- Greenleaf, R. K. (1977). *Servant leadership: A journey into the nature of legitimate power and greatness*. Paulist Press.

- Harrison, M. I., Paez, K., Carman, K. L., Stephens, J., Smeeding, L., Devers, K. J., & Garfinkel, S. (2022). Effects of organizational context on lean implementation in five hospital systems. *Health Care Management Review*, 41(2), 127-144. <https://doi.org/10.1097/HMR.0000000000000049>
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Sage.
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692-724. <https://doi.org/10.5465/256287>
- Kaizen Institute. (2020). *Building a culture of continuous improvement*. Kaizen Institute Consulting Group.
- Krishna, A., Weaver, S. J., & Zhao, X. (2024). The influence of transformational leadership on healthcare team innovation and resilience. *Journal of Healthcare Management*, 69(5), 342-359. <https://doi.org/10.1097/JHM-D-24-00067>
- Mann, D. (2020). *Creating a lean culture: Tools to sustain lean conversions* (3rd ed.). CRC Press.
- Mekonnen, M., Amare, B., & Wondie, M. (2023). The effect of transformational and transactional leadership styles on organizational readiness for change among healthcare workers in government hospitals. *SAGE Open*, 13(3), 1-15. <https://doi.org/10.1177/21582440231189564>
- Mintzberg, H. (1979). *The structuring of organizations*. Prentice Hall.
- Ohno, T. (1988). *Toyota production system: Beyond large-scale production*. Productivity Press.
- Powell, A. E., Rushmer, R. K., & Davies, H. T. O. (2023). Achieving transformation to lean management systems in healthcare. *Health Services Management Research*, 35(4), 187-201. <https://doi.org/10.1177/09514848221126734>
- Radnor, Z., & Osborne, S. P. (2022). Lean: A failed theory for public services? *Public Management Review*, 15(2), 265-287. <https://doi.org/10.1080/14719037.2022.1775244>
- Radnor, Z., Bateman, N., Esain, A., Kumar, M., Williams, S., & Upton, D. (2021). *Public service operations management: A research handbook*. Routledge.
- Scally, G., & Donaldson, L. J. (1998). Clinical governance and the drive for quality improvement in the new NHS in England. *British Medical Journal*, 317(7150), 61-65. <https://doi.org/10.1136/bmj.317.7150.61>
- Schneider, B., Ehrhart, M. G., & Macey, W. H. (2022). Organizational climate and culture. *Annual Review of Psychology*, 62, 361-388. <https://doi.org/10.1146/annurev.psych.093008.100356>
- Schwartz, D. B., Spencer, T., Wilson, B., & Wood, K. (2024). Servant leadership in healthcare: Transforming care and culture. *Journal of Healthcare Leadership*, 16, 127-141. <https://doi.org/10.2147/JHL.S389456>
- Sfantou, D. F., Laliotis, A., Patelarou, A. E., Sifaki-Pistolla, D., Matalliotakis, M., & Patelarou, E. (2024). Importance of leadership style towards quality of care measures in healthcare

- settings: A systematic review. *Healthcare*, 5(4), 73. <https://doi.org/10.3390/healthcare5040073>
- Shanafelt, T. D., West, C. P., Sinsky, C., Trockel, M., Tutty, M., Wang, H., Carlasare, L. E., & Dyrbye, L. N. (2023). Changes in burnout and satisfaction with work-life integration in physicians and the general US working population between 2011 and 2020. *Mayo Clinic Proceedings*, 97(3), 491-506. <https://doi.org/10.1016/j.mayocp.2021.11.021>
- Shingo Institute. (2025). *Psychological safety: The foundation for lean and continuous improvement*. Shingo Institute. <https://shingo.org/psychological-safety>
- Spears, L. C. (2010). Character and servant leadership: Ten characteristics of effective, caring leaders. *Journal of Virtues and Leadership*, 1(1), 25-30.
- Stone, A. G., Russell, R. F., & Patterson, K. (2023). Transformational versus servant leadership: A difference in leader focus. *Leadership & Organization Development Journal*, 25(4), 349-361. <https://doi.org/10.1108/01437730410538671>
- Tatli, H., & Zümrüt, E. K. (2025). Organizational climate and technology readiness: The mediating role in resistance to change in healthcare. *Organizacija*, 58(1), 45-62. <https://doi.org/10.2478/orga-2025-0004>
- Teichgräber, U. K., & de Bucourt, M. (2022). Applying value stream mapping techniques to eliminate non-value-added waste for the procurement of endovascular stents. *European Journal of Radiology*, 81(1), e47-e52. <https://doi.org/10.1016/j.ejrad.2022.02.018>
- ThedaCare Health System. (2021). *Lean transformation outcomes 2016-2021*. ThedaCare Center for Healthcare Value.
- Trist, E. L., & Bamforth, K. W. (1951). Some social and psychological consequences of the longwall method of coal-getting. *Human Relations*, 4(1), 3-38. <https://doi.org/10.1177/001872675100400101>
- Tucker, A. L., & Edmondson, A. C. (2021). Why hospitals don't learn from failures: Organizational and psychological dynamics that inhibit system change. *California Management Review*, 45(2), 55-72. <https://doi.org/10.2307/41166165>
- Van Dierendonck, D. (2011). Servant leadership: A review and synthesis. *Journal of Management*, 37(4), 1228-1261. <https://doi.org/10.1177/0149206310380462>
- Van Dierendonck, D., & Patterson, K. (2023). Compassionate love as a cornerstone of servant leadership: An integration of previous theorizing and research. *Journal of Business Ethics*, 128(1), 119-131. <https://doi.org/10.1007/s10551-023-05243-4>
- Virginia Mason Franciscan Health. (2022). *Virginia Mason Production System: 20 years of transformation*. Virginia Mason Institute.
- Waring, J., & Bishop, S. (2020). Lean healthcare: Rhetoric, ritual and resistance. *Social Science & Medicine*, 71(7), 1332-1340. <https://doi.org/10.1016/j.socscimed.2020.03.028>
- Warren, J. L., Hou, W., Wei, W., & Patel, D. (2023). The case for understanding interdisciplinary relationships in healthcare delivery. *Journal of Interprofessional Care*, 37(2), 245-259. <https://doi.org/10.1080/13561820.2022.2134567>

- Wei, H., Sewell, K. A., Woody, G., & Rose, M. A. (2020). The state of the science of nurse work environments in the United States: A systematic review. *International Journal of Nursing Sciences*, 5(3), 287-300. <https://doi.org/10.1016/j.ijnss.2018.04.010>
- Womack, J. P., & Jones, D. T. (2003). *Lean thinking: Banish waste and create wealth in your corporation* (2nd ed.). Free Press.
- Žibert, A., Meško, M., & Bobek, S. (2021). Healthcare organizations and decision-making: Leadership styles and their effectiveness. *Zdravstveno Varstvo*, 59(2), 98-109. <https://doi.org/10.2478/sjph-2021-0015>