

Authentic leadership, organizational culture and the effects of hospital quality management practices on quality of care and patient satisfaction

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Abstract

Aim: To examine the influence of hospital culture and authentic leadership on the effects of quality improvement practices on patient satisfaction.

Background: Nurses in formal leadership roles shape and are shaped by organizational culture to achieve high performance standards to influence quality of care.

Design: Using structural equation modelling, we tested a model on quality improvement practices across three participant groups that differed based on authentic leadership and hospital culture.

Methods: We used survey data from a cross-sectional study conducted in 2015 measuring nurse. Managers' perceptions of authentic leadership, implementation of quality improvement, and organizational culture in Canadian hospitals.

Results: 226 nurse managers participated. Our model estimations fit for the high-relational group and mixed group. Our model explained 50.7% and 39.5% variance in our outcome variable of patient satisfaction for the high-relational group and mixed group, respectively. Our model failed to fit the low-relational group.

Conclusion: Authentic leadership and developmental/group hospital cultures improve quality management practices, quality of care and patient satisfaction. In organizations with low authentic leadership and hierarchical/rational cultures, strategies should target increasing authentic leadership and shifting to developmental cultures. Organizations with high authentic leadership and/or developmental/group cultures should target employee engagement, autonomy and teamwork.

Impact: We examined how different combinations of authentic leadership and hospital culture influence the effects of quality management practices on quality improvement and patient satisfaction. Findings demonstrate that having *both* high authentic leadership and developmental or group hospital cultures are essential for quality improvement practices to enhance the quality of care and patient satisfaction. These organizations would benefit the most from systemic programs aimed at standardizing

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quality management practices as they have the culture and leadership to support these practices. For hospitals with hierarchical/rational cultures and/or low authentic leadership, enhancing hospital culture and leadership through leadership training and accreditation programs is critically needed.

Patient or Public Contribution: The College and Association of Registered Nurses of Alberta contributed to this study by facilitating data collection and supporting the conduct of the study through messaging to its members.

KEYWORDS

leadership, quality of care, quantitative approaches, nurse managers

1 | INTRODUCTION

Investing in organizational culture is vital for improving quality of healthcare delivery and requires sustained efforts for lasting impact of actions that improve quality (Andres et al., 2019). Nurses in formal leadership roles shape and are shaped by this culture, and they are implicitly or explicitly pressured to achieve high-performance standards. Ideally, this pressure drives actions that produce positive results for patients (Bliss et al., 2020). Authentic nurse leaders make it possible to use technological resources, facilitate interdisciplinarity, ensure organization of the environment and appropriately allocate human, physical, material and information resources in patient care to achieve improved patient, staff and health system outcomes (Alilyyani et al., 2018; Sobrinho et al., 2018; Wong & Cummings, 2009). Nurses identify competence in leadership, such as authentic leadership, as a key factor in supporting quality care as well as access to appropriate resources and infrastructure to carry out their work (Kowalski et al., 2020). Similarly, organizational culture influences the practices, behaviours and attitudes within organizations. In this paper, we examine how hospital culture and level of authentic leadership influence quality management practices that lead to patient satisfaction and quality of care outcomes.

2 | BACKGROUND

Leadership and organizational culture are closely related and influence each other to achieve organizational results (Mannion & Davies, 2018; Smith, 2015). Organizational culture can be considered a set of common guidelines that integrate an organization using common values and norms (Shortell et al., 1995; Taheri Otaghsara & Hamzehzadeh, 2017). Organizational culture can be characterized by four types: developmental, group, rational and hierarchical (Gregory et al., 2009; Shortell et al., 1995; Stock et al., 2007; Zu et al., 2010). Developmental and group cultures are associated with teamwork, participation, cooperation and transparency (Mandal, 2017; Shortell et al., 1995). Hierarchical and rational cultures emphasize formal and vertical structures focusing primarily on efficiency and achievement (Shortell et al., 1995). However, these types of cultures have been associated with a reduction in employee motivation, innovation

and problem-solving (Mandal, 2017). Authentic leadership of nurse managers enhances staff job satisfaction, work engagement, the healthy work environment and organizational commitment (Alilyyani et al., 2018; Baek et al., 2019; Raso et al., 2022), which contributes to improving quality in healthcare delivery and health outcomes (Cummings et al., 2010). Elements of authenticity include self-awareness, balanced information processing, genuine conduct, and trusting relationships (Walumbwa et al., 2008; Gardner et al., 2005; Taheri Otaghsara & Hamzehzadeh, 2017). In a healthcare environment with high-performance expectations, leadership that influences positive results, such as authentic leadership, is vital (Raso et al., 2020).

Leadership practices, particularly of nurse managers, influence quality management decisions and are integrally linked to the context or culture in which they occur (Cummings et al., 2021). Hospitals with good performance in quality of care and satisfaction can be characterized by an appropriate fit between leadership styles, organizational characteristics and individual staff attributes (Belrhiti et al., 2020). We hypothesized that hospitals with developmental/group cultures and higher scores on authentic leadership exhibit clearer pathways between quality improvement practices, employee authority to resolve care issues, ultimately leading to higher patient satisfaction.

3 | THE STUDY

3.1 | Aims

Our aim was to examine the influence of three contexts, characterized by differing hospital cultures and levels of authentic leadership, on the effects of a variety of quality improvement practices on patient satisfaction and quality improvement outcomes.

4 | METHODS

4.1 | Design

Data used in this analysis were from a cross-sectional observational study measuring authentic leadership, perceived implementation of quality improvement and organizational culture in Canadian

healthcare facilities, from the perspectives of nurse managers who are responsible for improving quality of care in their care areas (Bernardes et al., 2020).

4.2 | Instruments with validity and reliability

Participants in the cross-sectional observational study responded to a survey comprised of the 'Quality Improvement Implementation Survey II' (QIIS) (Quinn & Kimberly, 1984; Shortell et al., 1995), which measures quality improvement and organizational cultures, and the 'Authentic Leadership Questionnaire' (ALQ) (Avolio et al., 2012; Walumbwa et al., 2008), which measures observer-assessed authentic leadership. Internal consistency reliability, measured using Cronbach's alpha, ranged from 0.80 to 0.95 for the QIIS and 0.71 to 0.92 for the ALQ, with the exception of two domains reporting 0.57 and 0.60 Cronbach's alpha (Bernardes et al., 2020).

4.3 | Participants

The population from which we obtained a sample of participants consisted of nurses in manager positions including patient care managers, unit managers, coordinators and directors.

4.4 | Data collection

All nurses occupying manager positions working in the health system in Alberta, Canada, who had consented to be contacted for research ($n=1606$) by the College and Association of Registered Nurses of Alberta (CARNA) were invited to participate. Those in temporary positions or who worked for less than year were excluded. To preserve participant anonymity, CARNA mailed a recruitment letter explaining the details of the study, the consent form and the questionnaire. Respondents who volunteered to participate mailed responses directly to the research team. Data were collected in 2015. Ethical approval was provided by the Health Research Ethics Board of the University of Alberta (Study ID Pro00038738).

4.5 | Sample size and power

We aimed to have 100 participants per model based on general rules of thumb for sufficient power when employing structural equation modelling (Hayduk, 1987; Wolf, Harrington, Clark, & Miller, 2013). Although sample sizes did not meet this criterion, the ability to obtain a significant chi-square when testing the same number of model parameters confirmed that there was a sufficient sample size to detect model mis-specifications (Hayduk, 1996).

4.6 | Model development

We used structural equation modelling (SEM) to develop and test a theoretical model using data from the cross sectional study in Alberta, Canada (Hayduk, 1987; Hayduk & Littvay, 2012). To test our theoretical model, we created three datasets from the original data for analysis and model testing, based on theoretical reasoning and using procedures developed by Cummings in previous analytic work (Cummings et al., 2005; Cummings et al., 2007). In view of the positive relationship between authentic leadership and developmental/group cultures, we categorized data from hospital nursing managers into three different groups to distinguish relationship-focused cultures from efficiency/task focused cultures: (1) High-high group – those reporting high scores (above the sample mean (42.6 (SD=13.8)) for authentic leadership and developmental/group organizational cultures; (2) Low-low group – those reporting low scores (equal to or below the sample mean) for authentic leadership and hierarchical/rational organizational cultures; and (3) Mixed group – high authentic leadership and low culture (hierarchical/rational), or low authentic leadership and high culture (developmental/group). We generated these groupings based on variable distributions and research that supports strong associations between relational leadership styles and group/person-focused organizational cultures, whereas other leadership styles (such as task-focused/transactional styles) shape rational/hierarchical cultures (Casida & Pinto-Zipp, 2008; Cummings et al., 2018). Authentic leadership is considered a relational leadership style, which we hypothesized would function more effectively in relationship-focused cultures (developmental/group) (Cummings et al., 2021). The sample mean scores for authentic leadership were lower than other reported thresholds for high and low authentic leadership scores; however, other reports on thresholds relate to self-assessed leadership, which can be scored higher than observed leadership scores (Frasier, 2019). Ultimately, the groupings allowed us to ensure reasonably homogeneous samples of similar size to examine the causal effects of quality management practices on quality improvement in theoretically distinct healthcare settings (Hayduk, 1987). These understandings were the basis on which we asserted causal relationships and generated hypotheses for testing using SEM.

4.6.1 | Database preparation

First, we took Shortell's (Shortell et al., 1995) four organizational cultures and collapsed them into two groups (developmental/group, and hierarchical/rational). Second, we took the mean score of authentic leadership (Walumbwa et al., 2008) across all cases to select cases with high (>60) or low (≤ 60) scores. Although this reduced variation within the variable itself, dichotomizing the variable allowed us to obtain meaningful, parsimonious theoretical distinction, supported by extant literature, between datasets for model testing

(Cummings et al., 2005; Cummings et al., 2018; Hayduk, 1996). Third, we sorted each case into one of three groups based on authentic leadership scale scores and the two cultural groups. The high-high group contained cases reporting high authentic leadership and high developmental/group cultures ($n=70$); the low-low group contained cases reporting low authentic leadership and low developmental/group cultures [those reporting high hierarchical/rational cultures], ($n=71$) and a third mixed group contained all remaining cases with either low authentic leadership and high developmental/group cultures, or, high authentic leadership and low developmental/group cultures, ($n=84$). As cases were exclusive to each group, none were included in more than one group.

4.6.2 | Model specification

We hypothesized the direction of effects among the latent variables and assigned single indicators for each latent variable to generate a measurement model. The directions of effects were asserted through theory development based on multiple knowledge

sources, including: empirical research (Braithwaite et al., 2017; Casida & Pinto-Zipp, 2008; Cummings et al., 2018; Cummings et al., 2021), theoretical/conceptual papers (Drew & Pandit, 2020; Wong & Cummings, 2009), content expertise and experiential knowledge of the authors as clinicians who have worked in hospital settings as frontline staff and/or in formal leadership positions. The theoretical model is specified in Figure 1. The authors met several times over the course of model development to discuss the theory and research driving each relationship specified in the model before consensus was reached and statistical testing conducted. We assigned measurement errors, ranging from 10% to 20%, for the single indicators based on how closely each survey item depicted the latent variable. Single indicators, instead of total scale scores, were selected to enhance conceptual clarity of the variables examined. Using scale items instead of scale scores allowed study authors to distinguish the latent variables of individual items from each other by using the covariances of the multiple indicators instead of the covariances of the total scale scores (Hayduk & Littvay, 2012). Use of scale scores was of particular concern as the Shortall instrument was developed

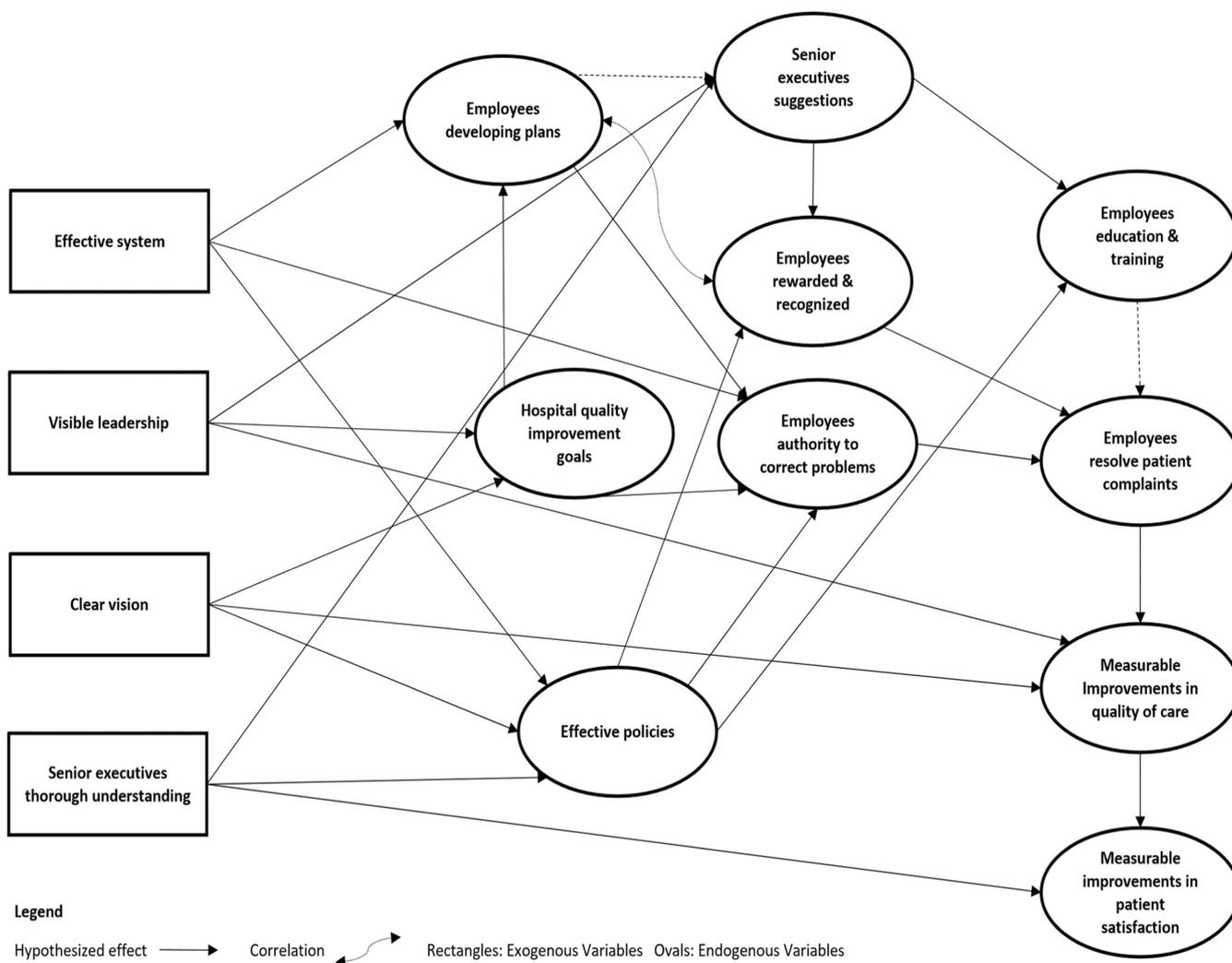


FIGURE 1 Initial Theoretical Model for Testing.

using factor-analysis, which can force a data-driven, rather than theoretically justified identity, onto latent variables (Hayduk & Littvay, 2012; Helfrich et al., 2007). Therefore, using single indicators with a fixed, theoretically supported measurement error was deemed best for model specification. Measurement errors are assigned to account for the error in the indicator that is not accounted for by the latent variable (Weston & Gore, 2006).

4.7 | Model variables

Fourteen latent variables, each with a single indicator, were included in the final structural equation model. Four exogenous latent variables (causal variables) were: effective system, visible leadership, senior executives thorough understanding and clear vision.

Nine endogenous latent variables (variables receiving effects) were: hospital quality improvement goals, effective policies, employees developing plans, senior executive suggestions, employee education and training, employee reward and recognition, employee authority to correct problems, employees resolve patient complaints and quality of care. The outcome variable of interest was measurable improvements in patient satisfaction.

See Table 1 for the individual indicators of each latent variable from the *Quality Improvement Implementation Survey II*. Participants were asked to rate each survey item (indicator) on a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=neither disagree nor agree, 4=agree, 5=strongly agree).

4.8 | Data analysis

Common method biases, particularly those around method variance, were evaluated and addressed accordingly (Hayduk, 1987; Podsakoff et al., 2003). Error variances were applied to each variable based on previous research and theoretical understandings of the items themselves and how data were collected (Hayduk, 1987), path diagrams forced the explicit specification or relationships among variables in the model (Shadish et al., 2002), scales employed were tested for reliability and validity, multivariate normality and multicollinearity were assessed and not violated, and in some cases and specific items were selected instead of whole scale scores to improve the clarity and precision of concept measurement (Hayduk, 1996; Schreiber-Gregory & Jackson, 2017). Furthermore, we specified missing data, assessed data missingness patterns and employed pairwise deletion to address missing data, leading to an average n of 69, 70 and 82 cases for the high-high, low-low and mixed group, respectively. Covariance matrices representing the empirical data in each group were generated using SPSS Statistics 26 (IBM Corp. Released, 2016). We tested the structural equation model using LISREL 8.8 maximum likelihood estimation (Jöreskog et al., 1996). The same theoretical model was tested for each group. Multi-group modelling was

considered for this analysis; however, our sample sizes were too small (less than 100 participants) to support the additional statistical tests required for multi-group analysis (Kline, 2005).

We used the chi-square (χ^2) fit index, an omnibus statistical test, to report whether our model fit the data in all three groups. A significant χ^2 indicates that the model does not fit the empirical data, while a nonsignificant χ^2 indicates that the model fits the empirical data and provides a plausible theoretical model of the effects in the real world. We used chi-square as a measure of exact fit, rather than the root mean square of approximation (RMSEA) as the RMSEA is a measure of approximate fit and is concerned with discrepancies due to approximation, resulting in a biased estimate of the population error of approximation (despite a term in the analysis being added to correct this bias) (Hayduk, 1987; Schermelleh-Engel et al., 2003). Chi-square can be influenced by sample size and violations of multivariate normality assumptions; multivariate normality was assessed to ensure no violations. The ability to detect a significant chi-square in the model with the same number of parameters indicates that the sample size is sufficient to support the use of χ^2 . We report RMSEA values as a form of sensitivity analysis to confirm our conclusions, but these values do not drive our understandings of model fit.

5 | RESULTS

5.1 | Participants

Overall, 255 of 1606 invited nurse managers agreed to participate and 226 surveys were completed and used in data analysis. Of the 226 participants, most were female (91.6%), worked in hospitals (58.8%) and in facilities with over 150 beds (67.7%). Only 31.5% of respondents had post-graduate education. The mean age of respondents was 52.5 years (± 8.0), ranging from 30 to 71 years, and the average professional experience was 28.2 years (± 10.7), with an average time in their respective institutions of 15.6 years (± 10.3), including 8.4 (± 6.7) years in a management position (data not shown). Descriptive results for each group can be viewed in Table 1.

5.2 | Model testing results

Consistent with our hypothesis, our model estimations fit for the high-high group with fit indices of $\chi^2 = 72.869$, $df = 58$, $p = 0.090$ and mixed group with fit indices of $\chi^2 = 75.013$, $df = 58$, $p = 0.066$. Our model explained 50.7% variance in our outcome latent variable, hospital measurable improvements in quality of care, for the high-high group and 39.5% variance in the mixed group. Our model failed to fit the low-low group ($\chi^2 = 92.832$, $df = 58$, $p = 0.003$). RMSEA values for the high-high, mixed and low-low groups were 0.0474, 0.0551 and 0.0832, respectively.

The theoretical model tested among the three groups is presented in Figure 1. Estimated coefficients across all groups can be

TABLE 1 Descriptive results by group.

Latent concept	Survey item	Group	Mean	Standard deviation	Variance	Measurement error variance (%)
Exogenous variables						
Effective System	The hospital has an effective system for employees to make suggestions to management on how to improve quality.	High	3.70	0.960	0.921	0.0921 (10%)
		Mixed	3.24	0.919	0.844	0.0844 (10%)
		Low	2.64	1.155	1.334	0.1334 (10%)
Visible Leadership	The senior executives provide highly visible leadership in maintaining an environment that supports quality improvement.	High	3.69	1.084	1.175	0.2350 (20%)
		Mixed	3.27	1.112	1.237	0.2474 (20%)
		Low	2.31	1.166	1.360	0.2720 (20%)
Senior Executives Thorough Understanding	The senior executives have a thorough understanding of how to improve the quality of care and services.	High	3.45	1.010	1.021	0.1021 (10%)
		Mixed	2.96	1.066	1.136	0.1136 (10%)
		Low	2.27	0.947	0.896	0.0896 (10%)
Clear Vision	The senior executives have articulated a clear vision for improving the quality of care and services.	High	3.67	1.003	1.006	0.1006 (10%)
		Mixed	3.26	1.121	1.256	0.1256 (10%)
		Low	2.61	1.141	1.302	0.1302 (10%)
Endogenous variables						
Hospital Quality Improvement Goals	The hospital's quality improvement goals are known throughout the organization.	High	3.36	1.064	1.131	0.1131 (10%)
		Mixed	3.11	0.949	0.900	0.0900 (10%)
		Low	2.44	1.131	1.278	0.1278 (10%)
Effective Policies	The hospital has effective policies to support improving the quality of care and services.	High	3.75	0.920	0.847	0.1694 (20%)
		Mixed	3.46	0.919	0.844	0.1688 (20%)
		Low	2.97	0.963	0.927	0.1854 (20%)
Employees Developing Plans	Hospital employees are involved in developing plans for improving quality.	High	3.41	1.000	1.000	0.1000 (10%)
		Mixed	3.11	1.053	1.109	0.1109 (10%)
		Low	2.23	1.085	1.177	0.1177 (10%)
Senior Executives Suggestions	The senior executives act on suggestions to improve the quality of care and services.	High	3.49	1.015	1.030	0.1030 (10%)
		Mixed	3.02	1.030	1.061	0.1061 (10%)
		Low	2.35	1.033	1.068	0.1068 (10%)
Employees Education & Training	Hospital employees are given education and training in how to identify and act on quality improvement opportunities.	High	3.29	1.065	1.135	0.1135 (10%)
		Mixed	3.19	1.047	1.096	0.1096 (10%)
		Low	2.74	1.112	1.237	0.1237 (10%)
Employees Rewarded & Recognized	Hospital employees are rewarded and recognized (e.g., financially and/or otherwise) for improving quality.	High	2.84	1.175	1.381	0.1381 (10%)
		Mixed	2.49	1.033	1.068	0.1068 (10%)
		Low	1.94	0.984	0.968	0.0968 (10%)
Employees Authority to Correct Problems	Hospital employees have the authority to correct problems in their area when quality standards are not being met.	High	3.56	1.030	1.062	0.1062 (10%)
		Mixed	3.33	0.948	0.900	0.0900 (10%)
		Low	2.58	1.104	1.219	0.1219 (10%)
Employees Resolve Patient Complaints	Hospital employees promptly resolve patient complaints.	High	4.01	0.813	0.662	0.0993 (15%)
		Mixed	3.67	0.899	0.808	0.1212 (15%)
		Low	3.36	1.155	1.334	0.2001 (15%)
Measurable Improvements in Quality of Care	Over the past few years, the hospital has shown steady, measurable improvements in the quality of care provided to patients.	High	3.71	0.907	0.824	0.0824 (10%)
		Mixed	3.35	0.921	0.849	0.0849 (10%)
		Low	2.75	0.982	0.963	0.0963 (10%)
Measurable Improvements in Patient Satisfaction	Over the past few years, the hospital has shown steady, measurable improvements in patient satisfaction results.	High	3.56	0.974	0.948	0.0948 (10%)
		Mixed	3.34	0.898	0.806	0.0806 (10%)
		Low	2.71	1.052	1.106	0.1106 (10%)

(Continues)

TABLE 2 Estimated β effects of the exogenous variables.

Endogenous variables	Exogenous variables				
	Group	Effective system	Visible leadership	Senior executives' thorough understanding	Clear vision
Employees Developing Plans	High	0.385*			
	Mixed	0.179			
	Low	-0.046			
Employees Authority to Correct Problems	High	0.221			
	Mixed	0.321*			
	Low	0.517*			
Effective Policies	High	0.367*		0.322*	0.114
	Mixed	0.387*		0.180	0.230*
	Low	0.116		0.127	0.187
Senior Execs Suggestions	High		0.576*	0.255	
	Mixed		0.339*	0.467*	
	Low		0.528*	0.346*	
Measurable Improvements in Quality of Care	High		0.023		0.315*
	Mixed		0.469*		-0.083
	Low		0.210		0.080
Quality Improvement Goals	High		-0.252		0.724*
	Mixed		0.328		0.092
	Low		-0.065		0.564*
Measurable Improvements in Patient Satisfaction	High			0.392*	
	Mixed			0.070	
	Low			0.142	

β is the beta co-efficient.

*Statistically significant beta co-efficient as it exceeds 2 standard errors.

viewed in Tables 2 and 3. The covariance and correlation matrices of all variables are presented in Supplementary File 2.

5.3 | Model effects

5.3.1 | Statistically significant casual pathways

In this section, we highlight notable significant effects and causal pathways in each group. Models with Beta coefficients for all three groups are displayed in Supplementary File 1.

In the **high-high group**, hypothesized pathways in the model demonstrated that senior executives' thorough understanding of how to improve quality significantly influenced whether the hospital had effective policies to support improving quality of care and services ($\beta=0.322$). In turn, effective policies ($\beta=0.396$) led to employee authority to correct problems in their area when quality standards were not being met and ability to resolve patient complaints quickly ($\beta=0.267$). Employee authority to correct problems indirectly led to statistically significant improvements in quality of care provided to patients and subsequent increases in patient satisfaction. Senior executives' thorough understanding directly and statistically significantly influenced measurable increases in patient satisfaction ($\beta=0.392$).

In the **mixed group**, both senior executives' thorough understanding, and visible leadership in maintaining an environment that supports quality improvement led to senior executives acting on suggestions. Senior executives' suggestions significantly influenced employees being rewarded and recognized for improving quality ($\beta=0.307$), which led to employees quickly resolving patient complaints ($\beta=0.250$). Consequently, resolving patient complaints led to a direct increase in hospital measurable improvements in quality of care ($\beta=0.418$) and subsequent patient satisfaction ($\beta=0.578$).

Our model's lack of fit for the **low-low group** demonstrated that its' latent variables and relationships to improved patient satisfaction are mis-specified for this group's data that reflected hierarchical/rational cultures and lack of authentic leadership. Therefore, we do not discuss the significant predictors and pathways leading to improved patient satisfaction. In the following section, we compare differences in specific effects between variables (*b* and direction) for all groups. The initial theoretical model tested among the three groups is presented in Figure 1.

5.3.2 | Differences in effects among groups

The means and intensity of effects in our model differed across the three groups. Generally, means of model variables were highest for

TABLE 3 Estimated unstandardized β effects of the endogenous variables.

		Employees developing plans	Hospital quality improvement plans	Effective policies	Senior execs suggestions	Employees rewarded and recognized	Employees authority to correct problems	Employees education and training	Employees resolve Pt. complaints	Hospital measurable improvement in quality of care
Employees Developing Plans	High		0.299*							
	Mixed		0.443*							
	Low		0.487*							
Senior Execs Suggestions	High	0.093								
	Mixed	0.223*								
	Low	0.039								
Employees Rewarded & Recognized	High			0.638*	0.194					
	Mixed			0.426*	0.307*					
	Low			0.309*	0.160					
Employees Authority to Correct Problems	High	0.240	-0.153	0.396*						
	Mixed	0.170	-0.090	0.356*						
	Low	0.164	-0.035	0.066						
Employees Education & Training	High			0.754*	0.139					
	Mixed			0.387*	0.170					
	Low			0.244	0.126					
Employees Resolve Pt. Complaints	High					0.168	0.267*	0.014		
	Mixed					0.250*	0.249*	0.003		
	Low					0.133	0.498*	0.038		
Hospital Measurable Improvement in Quality of Care	High								0.521*	
	Mixed								0.418*	
	Low								0.245*	
Hospital Measurable Improvement in Patient Satisfaction	High									0.508*
	Mixed									0.578*
	Low									0.580*

β is the beta co-efficient.

*Statistically significant beta co-efficient as it exceeds more than 2 standard error.

those in the high-high group and lowest for those in the low-low group. Although the direction of effects in the high-high group was positive, direction and intensity of effects varied across groups, with some negative effects noted for the mixed group and greater intensity of effects for the low-low group. Differences in effects across groups related to an effective system for quality improvement suggestions on having effective policies, with higher means and greater intensity of effects for mixed and relational groups. The effects of an effective system on employees being able to correct problems in their area were notably different across groups, with a lower mean for the low-low group but a greater slope of effect. However, the means and slope of effects of effective policies on employees correcting problems were greater for both the high-relational and mixed groups. Means differed among groups related to senior executives having a thorough understanding with high-high being highest, then mixed, then low-low. The intensity of effects on patient satisfaction was greatest for the high-high group. This was also evident for the effects of senior executives articulating a clear vision. Effects between selected variables across groups can be viewed in [Figure 2](#).

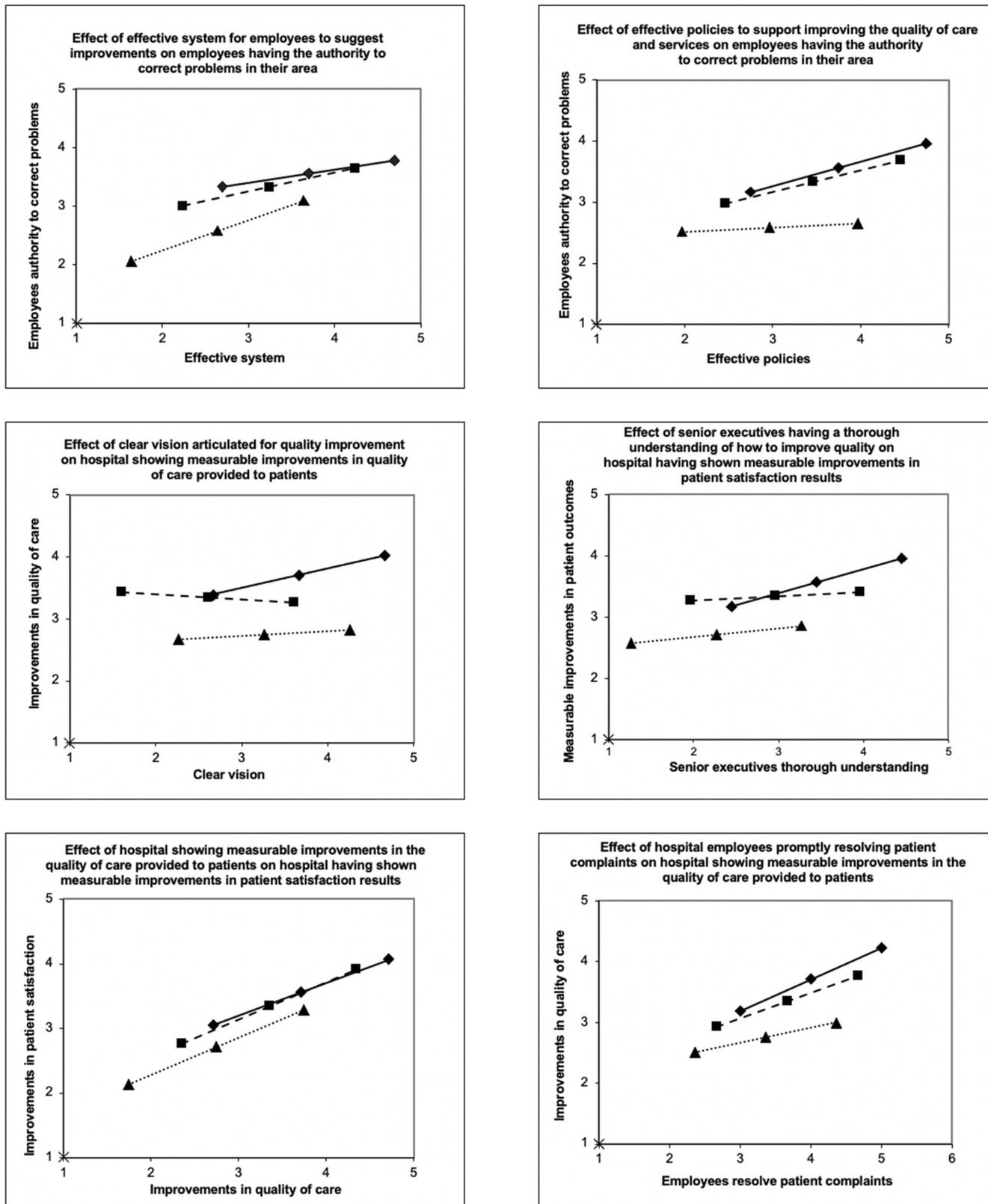
6 | DISCUSSION

Our study demonstrates the critical influence that *both* authentic leadership and developmental or group-focused hospital cultures have on quality management practices, perceived quality of care and patient satisfaction. We conducted this study to examine the effects of distinct combinations of hospital culture and leadership on quality management practices and patient satisfaction. This distinguishes our study from others that only examine the individual effects of leadership, quality management practices and organizational culture on patient satisfaction (Alilyyani et al., 2018; Meterko et al., 2004). Our model did not fit in the low-low group (low authentic leadership and hierarchical/rational organizational cultures). Crucially, this tells us that lack of authentic leadership combined with hierarchical or rational hospital cultures do not support the quality improvement practices that lead to improved quality of care and enhanced patient satisfaction specified in this study. These findings are in line with other research studies that demonstrate that authentic leadership improves patient outcomes and that teamwork-based hospital cultures improve patient satisfaction, whereas non-relational leadership styles are associated with poor work culture, safety climate and patient outcomes (Alilyyani et al., 2018; Cummings et al., 2010, 2018; Meterko et al., 2004). Furthermore, traditionally, hierarchical healthcare organizations can deter employees from engaging in quality improvement activities. Ineffective leadership patterns are related to less effective systems and unstable organizations (Cummings et al., 2007; Gadolin & Andersson, 2017). These findings emphasize the importance of enhancing both a developmental/group hospital culture and authentic leadership at senior management levels. Research supports that certain hospital accreditation processes including a series of quality improvement initiatives can lead to a reduction in hierarchical culture and enhance developmental culture in healthcare organizations (Andres et al., 2019).

In this study, we demonstrated that clear vision and leaders' understanding of effective quality management practices are vital to quality improvement. For the high-high group in particular, clear vision and a leader's thorough understanding of effective quality improvement practices significantly increased perceptions of effective quality improvement policies and had direct effects on improvements in quality of care and patient satisfaction. A clear vision for quality improvement ensures a unified understanding of what organization members need to accomplish to achieve quality improvement goals. For a vision to be clear, a thorough understanding of the principles and practices underpinning that vision is essential. A clear vision is critical for the explication of a framework for quality improvement, the identification of key stakeholders and the selection of measures for evaluation (Ma et al., 2020). These effects were weaker or not seen in the mixed and low-low groups. We cannot determine whether a clear vision and thorough understanding of quality improvement practices could not be enacted by those lacking authentic leadership or within hierarchical/rational cultures, or whether the vision and understandings held by persons leading in those contexts were different in ways that did not support quality improvement. Given the differences in effects for these variables among groups, and their importance in the causal pathways articulated in this model, more work is warranted to explore whether it is the type of vision or their ability to enact their vision that differs among groups.

A recent review on determinants of nursing leadership demonstrated that targeted interventions to enhance leadership are generally effective, regardless of the program length or mode of delivery (Cummings et al., 2021). Notably, most leadership interventions in healthcare go beyond one-time workshop initiatives to ongoing mentoring, coaching, and follow up (Cummings et al., 2021). Among other determinants of leadership identified in this review, organizational climate, shared governance, institutional control and institutional task are elements that influence leadership practices. These practices are closely linked to the context in which they occur and do not depend only on the characteristics of individuals (Cummings et al., 2021). Health organizations should focus on training leaders for authentic leadership; this will not only help organizations enhance positive work environments but also retain quality human resources (Qureshi & Aleemi, 2018).

In high-high and mixed groups, quality improvement policies and systems for involving employees in quality improvement practices led to increases in employees' abilities to correct issues as they arise leading to increased patient satisfaction. Our findings align with other literature that explores perceptions or individual effects of leadership or hospital culture on employee engagement. Specifically, authentic leaders support employees in their freedom to make decisions and help to build trusting relationships with employees that result in increased work engagement and involvement in quality improvement or joint manager and employee initiatives (Khalil & Siddiqui, 2020). The quality of leader-employee and co-worker relationships is instrumental for employee engagement in organizational activities (Gadolin & Andersson, 2017; McAuliffe et al., 2019).



Solid line= High-high group; Dashed line= mixed group; Dotted line=low-low group

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FIGURE 2 Differential effects between selected variables across groups.

Generating systems that intentionally support these and other working relationships, as well as engagement among employees needs to be further investigated (Gadolin & Andersson, 2017). Specifically, more work is needed to implement and evaluate interventions related to organizational redesign (e.g. standardizing quality improvement processes, creating dedicated teams and localizing professionals to support meeting quality improvement goals). Systematic training to improve teamwork to enhance quality of care and patient outcomes, such as the Team STEPPS program developed by the Agency for Healthcare Research and Quality (AHRQ) and the Department of Defence (DoD), is also required (Buljac-Samardzic et al., 2020). In particular, organizations with highly developmental/group hospital cultures and authentic leaders without these sorts of systems in place could benefit greatly from these interventions.

6.1 | Strength and limitations of the work

This research study has strengths and limitations. Our findings may not be generalizable to regions outside of Alberta or Canada, a low response rate, and 7-year-old data are important limitations. Nurse managers' self-report on quality improvement outcomes is a limitation of this study; however, using observer reported scores on authentic leadership is a strength of this study. Despite our model fitting in two or the three studied groups, our models may be misspecified or missing relevant variables. A cross-sectional design limits our ability to assert strong causal claims and generates potential biases as artifactual covariances could be produced when measuring different constructs in the same location, at the same time and using the same medium. Some of these biases were mitigated through the intentional specification of error variances for each variable. Moreover, this study was guided by theory, with models carefully constructed by content experts and tested using robust statistical methods.

7 | CONCLUSION

Ensuring that hospital leadership styles and cultures are complementary and relationship-focused is critical to improving quality of care and patient outcomes. Our results and model fit were best for hospitals with high authentic leadership and developmental/group hospital cultures. In our study, lack of authentic leadership combined with hierarchical or rational hospital cultures did not support the quality improvement practices that led to improved quality of care. Implications for quality improvement may be gleaned from this result. In organizations with low authentic leadership and hierarchical/rational cultures, interventions or strategies should target increasing authentic leadership and shifting hospital culture to more group or developmental cultures. Organizations with high authentic leadership and/or developmental/group cultures should target improving employee engagement and autonomy, as well as fostering teamwork and relationship building.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE*):1) substantial contributions to conception and design, acquisition of data or analysis and interpretation of data;2) drafting the article or revising it critically for important intellectual content.* <http://www.icmje.org/recommendations/>

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CONFLICT OF INTEREST STATEMENT

No conflict of interest has been declared by the author(s).

PEER REVIEW

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

- Alilyyani, B., Wong, C. A., & Cummings, G. (2018). Antecedents, mediators, and outcomes of authentic leadership in healthcare: A systematic review. *International Journal of Nursing Studies*, 83, 34–64. <https://doi.org/10.1016/j.ijnurstu.2018.04.001>
- Andres, E. B., Song, W., Schooling, C. M., & Johnston, J. M. (2019). The influence of hospital accreditation: a longitudinal assessment of organizational culture. *BMC Health Services Research*, 19(1), 467. <https://doi.org/10.1186/s12913-019-4279-7>
- Avolio, B. J., Gardner, W. L., & Walumbwa, F. O. (2012). Authentic leadership questionnaire. <http://www.mindgarden.com/products/alq.htm>
- Baek, H., Han, K., & Ryu, E. (2019). Authentic leadership, job satisfaction and organizational commitment: The moderating effect of nurse tenure. *Journal of Nursing Management*, 27(8), 1655–1663. <https://doi.org/10.1111/jonm.12853>
- Belrhiti, Z., Van Damme, W., Belalia, A., & Marchal, B. (2020). Unravelling the role of leadership in motivation of health workers in a Moroccan

- public hospital: a realist evaluation. *BMJ Open*, 10(1), e031160. <https://doi.org/10.1136/bmjopen-2019-031160>
- Bernardes, A., Gabriel, C. S., Cummings, G. G., Zanetti, A. C. B., Leoneti, A. B., Caldana, G., & Maziero, V. G. (2020). Organizational culture, authentic leadership and quality improvement in Canadian health-care facilities. *Rev Bras Enferm*, 73(Suppl 5), e20190732. <https://doi.org/10.1590/0034-7167-2019-0732>
- Bliss, K., Chambers, M., & Rambur, B. (2020). Building a culture of safety and quality: The paradox of measurement. *Nursing Economic*, 38(4), 178–184. <https://www.nursingconomics.net/necfiles/2020/JA20/178.pdf>
- Braithwaite, J., Herkes, J., Ludlow, K., Testa, L., & Lamprell, G. (2017). Association between organizational and workplace cultures, and patient outcomes: systematic review. *BMJ OPEN*, 7(11), e017708. <https://doi.org/10.1136/bmjopen-2017-017708>
- Buljac-Samardzic, M., Doekhie, K. D., & van Wijngaarden, J. D. H. (2020). Interventions to improve team effectiveness within health care: A systematic review of the past decade. *Human Resources for Health*, 18(1), 2. <https://doi.org/10.1186/s12960-019-0411-3>
- Casida, J., & Pinto-Zipp, G. (2008). Leadership-organizational culture relationship in nursing units of acute care hospitals. *Nursing Economic*, 26(1), 7–15; quiz 16. <https://www.ncbi.nlm.nih.gov/pubmed/18389837>
- IBM Corp. (2016). Released. IBM SPSS Statistics for Windows, Version 24.0. IBM Corp.
- Cummings, G., Hayduk, L., & Estabrooks, C. (2005). Mitigating the impact of hospital restructuring on nurses. *Nursing Research*, 54(1), 212. <https://doi.org/10.1097/00006199-200501000-00002>
- Cummings, G. G., Estabrooks, C. A., Midodzi, W. K., Wallin, L., & Hayduk, L. (2007). Influence of organizational characteristics and context on research utilization. *Nursing Research*, 56(4), S24–S39. <https://doi.org/10.1097/01.NNR.0000280629.63654.95>
- Cummings, G. G., Lee, S., Tate, K., Penconek, T., Micaroni, S. P. M., Paananen, T., & Chatterjee, G. E. (2021). The essentials of nursing leadership: A systematic review of factors and educational interventions influencing nursing leadership. *International Journal of Nursing Studies*, 115, 103842. <https://doi.org/10.1016/j.ijnurstu.2020.103842>
- Cummings, G. G., Midodzi, W. K., Wong, C. A., & Estabrooks, C. A. (2010). The contribution of hospital nursing leadership styles to 30-day patient mortality. *Nursing Research*, 59(5), 331–339. <https://doi.org/10.1097/NNR.0b013e3181ed74d5>
- Cummings, G. G., Tate, K., Lee, S., Wong, C. A., Paananen, T., Micaroni, S. P. M., & Chatterjee, G. E. (2018). Leadership styles and outcome patterns for the nursing workforce and work environment: A systematic review. *International Journal of Nursing Studies*, 85, 19–60. <https://doi.org/10.1016/j.ijnurstu.2018.04.016>
- Drew, J. R., & Pandit, M. (2020). Why healthcare leadership should embrace quality improvement. *BMJ*, m872. <https://doi.org/10.1136/bmj.m872>
- Frasier, N. (2019). Preparing nurse managers for authentic leadership: A pilot leadership development program. *The Journal of Nursing Administration*, 49(2), 79–85. <https://doi.org/10.1097/NNA.0000000000000714>
- Gadolin, C., & Andersson, T. (2017). Healthcare quality improvement work: a professional employee perspective. *International Journal of Health Care Quality Assurance*, 30(5), 410–423. <https://doi.org/10.1108/IJHCQA-02-2016-0013>
- Gardner, W. L., Avolio, B. J., & Walumbwa, F. O. (2005). *Authentic leadership theory and practice: Origins, effects and development* (1st ed.). Elsevier JAI.
- Gregory, B. T., Harris, S. G., Armenakis, A. A., & Shook, C. L. (2009). Organizational culture and effectiveness: A study of values, attitudes, and organizational outcomes. *Journal of Business Research*, 62(7), 673–679. <https://doi.org/10.1016/j.jbusres.2008.05.021>
- Hayduk, L. A. (1987). *Structural Equation Modelling with LISREL: Essentials and Advances*. Johns Hopkins University.
- Hayduk, L. A. (1996). *LISREL: Issues, Debates, and Strategies*. Johns Hopkins University Press.
- Hayduk, L. A., & Littvay, L. (2012). Should researchers use single indicators, best indicators, or multiple indicators in structural equation models? *BMC Medical Research Methodology*, 12(1), 159. <https://doi.org/10.1186/1471-2288-12-159>
- Helfrich, C. D., Li, Y.-F., Mohr, D. C., Meterko, M., & Sales, A. E. (2007). Assessing an organizational culture instrument based on the competing values framework: Exploratory and confirmatory factor analyses. *Implementation Science*, 2(1), 13. <https://doi.org/10.1186/1748-5908-2-13>
- Jöreskog, K. G., Sörbom, D., & Inc, S. (1996). *LISREL 8: User's Reference Guide*. Scientific Software International, Inc. <https://books.google.com.br/books?id=9AC-s50RjacC>
- Khalil, S. A., & Siddiqui, D. A. (2020). Authentic leadership and work engagement: The mediatory role of employees' trust and occupational self-efficacy. *International Journal of Organizational Leadership*, 8(3), 17–42. <https://doi.org/10.33844/ijol.2020.60481>
- Kline, R. B. (2005). *Principles and Practices of Structural Equation Modelling* (2nd ed.). Guilford Press.
- Kowalski, M. O., Basile, C., Bersick, E., Cole, D. A., McClure, D. E., & Weaver, S. H. (2020). What do nurses need to practice effectively in the hospital environment? An integrative review with implications for nurse leaders. *Worldviews on Evidence-Based Nursing*, 17(1), 60–70. <https://doi.org/10.1111/wvn.12401>
- Ma, J., Wong, B. M., Micieli, J. A., Calafati, J., Low, S., El-Defrawy, S., & Hatch, W. (2020). Vision to improve: quality improvement in ophthalmology. *Canadian Journal of Ophthalmology*, 55(2), 107–115. <https://doi.org/10.1016/j.cjco.2019.07.020>
- Mandal, S. (2017). The influence of organizational culture on healthcare supply chain resilience: moderating role of technology orientation. *Journal of Business & Industrial Marketing*, 32(8), 1021–1037. <https://doi.org/10.1108/JBIM-08-2016-0187>
- Mannion, R., & Davies, H. (2018). Understanding organizational culture for healthcare quality improvement. *BMJ (Online)*, 363, k4907. <https://doi.org/10.1136/bmj.k4907>
- McAuliffe, N., Bostain, N. S., & Witchel, A. D. (2019). The relationship between authentic leadership, trust, and engagement in library personnel. *Journal of Library Administration*, 59(2), 129–148. <https://doi.org/10.1080/01930826.2018.1562822>
- Meterko, M., Mohr, D. C., & Young, G. J. (2004). Teamwork culture and patient satisfaction in hospitals. *Medical Care*, 42(5), 492–498. <https://doi.org/10.1097/01.mlr.0000124389.58422.b2>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioural research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903.
- Quinn, R. E., & Kimberly, J. R. (1984). Paradox, planning, and perseverance: Guidelines for managerial practice. In J. R. Kimberly, & R. E. Quinn (Eds.), *Managing organization transitions* (pp. 295–313). Dow Jones-Irwin.
- Qureshi, M. A., & Aleemi, A. R. (2018). Authentic Leadership and Job Satisfaction: Measuring the mediating role of affective organizational commitment in healthcare sector of Pakistan. *Journal of Independent Studies and Research-Management, Social Sciences and Economics*, 16(1), 99–116. <https://jisr.szabist.edu.pk/JISR-MSSE/Publication/2018/16/1/530/Article>
- Raso, R., Fitzpatrick, J. J., & Masick, K. (2020). Clinical nurses' perceptions of authentic nurse leadership and healthy work environment. *JONA: The Journal of Nursing Administration*, 50(9), 489–494. <https://doi.org/10.1097/NNA.0000000000000921>
- Raso, R., Fitzpatrick, J. J., & Masick, K. (2022). Perceptions of US nurses and nurse leaders on authentic nurse leadership, healthy work environment, intent to leave and nurse well-being during a second pandemic year: A cross sectional study. *Journal of Nursing Management*, 30(7), 2699–2706. <https://doi.org/10.1111/jonm.13712>

- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research*, 8(2), 23–74.
- Schreiber-Gregory, D. N., & Jackson, H. M. (2017). Multicollinearity: What is it, why should we care and how can it be controlled? <https://support.sas.com/resources/papers/proceedings17/1404-2017.pdf>
- Shadish, W., Cook, T., & Campbell, D. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Wadsworth Cengage Learning.
- Shortell, S. M., O'Brien, J. L., Carman, J. M., Foster, R. W., Hughes, E. F., Boerstler, H., & O'Connor, E. J. (1995). Assessing the impact of continuous quality improvement/total quality management: concept versus implementation. *Health Services Research*, 30(2), 377–401. <https://pubmed.ncbi.nlm.nih.gov/7782222>
- Smith, C. (2015). Exemplary leadership. *Nursing Management*, 46(3), 47–51. <https://doi.org/10.1097/01.NUMA.0000456659.17651.c0>
- Sobrinho, A. B., Bernardo, J. M. S., Alexandre, A. K. S., Oliveira, V. L., & Leite-Salgueiro, C. D. B. (2018). Liderança do Enfermeiro: Reflexões sobre o papel do Enfermeiro no Contexto Hospitalar. *ID on Line REVISTA DE PSICOLOGIA*, 12(41), 693–710. <https://doi.org/10.14295/idonline.v12i41.1238>
- Stock, G. N., McFadden, K. L., & Gowen, C. R., III. (2007). Organizational culture, critical success factors, and the reduction of hospital errors. *International Journal of Production Economics*, 106(2), 368–392. <https://ideas.repec.org/a/eee/proeco/v106y2007i2p368-392.html>
- Taheri Otaghsara, S. M., & Hamzehzadeh, H. (2017). The effect of authentic leadership and organizational atmosphere on positive organizational behaviour. *International Journal of Management, Accounting and Economics*, 4(11), 1122–1135. https://www.ijmae.com/article_115218.html
- Walumbwa, F. O., Avolio, B. J., Gardner, W. L., Wernsing, T. S., & Peterson, S. J. (2008). Authentic leadership: Development and validation of a theory-based Measure†. *Journal of Management*, 34(1), 89–126. <https://doi.org/10.1177/0149206307308913>
- Weston, R., & Gore, P. A. (2006). A brief guide to structural equation modelling. *The Counselling Psychologist*, 34(5), 719–751. <https://doi.org/10.1177/0011000006286345>
- Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*, 76(6), 913–934. <https://doi.org/10.1177/0013164413495237>
- Wong, C., & Cummings, G. (2009). Authentic leadership: a new theory for nursing or back to basics? *Journal of health organization and management*, 23(5), 522–538. <https://doi.org/10.1108/14777260910984014>
- Zu, X., Robbins, T. L., & Fredendall, L. D. (2010). Mapping the critical links between organizational culture and TQM/Six Sigma practices. *International Journal of Production Economics*, 123(1), 86–106. <https://econpapers.repec.org/RePEc:eee:proeco:v:123:y:2010:i:1:p:86-106>

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