

THE IMPACT OF COMPASSION ON ORGANIZATIONAL CULTURE: AN EMPIRICAL STUDY OF REGISTERED NURSES

Azadeh Tehranian, Department of IO/Business Psychology, Organization Leadership, Behavioral Economic, The Chicago School of Professional Psychology, 325 N Wells St, Chicago, IL 60654, 617-312-3786, ozzade@gmail.com

ABSTRACT

This study sought to examine the relationships among stress, compassion, and organizational culture in a sample of 356 registered nurses in hospital settings. The results showed that patient-safety culture is positively correlated with compassion among registered nurses with a small effect size. Even a small effect size offers practical significance, given the immense scope of loss in human life and capital resulting from a weak culture of safety. In addition, the results showed that stress and compassion accounted for 4 to 15% of the variance in patient-safety culture in the studied sample of nurses. These findings suggest that stress and compassion have individual, additive effects on the patient-safety culture.

Keywords: Organizational culture, safety culture, compassion, nurses, stress

INTRODUCTION

Organizational Culture

Organizational culture is defined as a set of shared assumptions and mental models that guide actions in organizations by defining appropriate behavior in response to different situations [34]. These largely tacit assumptions and mental models are expressed in the form of beliefs, norms, practices, rituals, and visual, verbal, and material artifacts representing the visible, audible, and tangible elements of an organization's culture and reflect its unique collective learning history [39] [44]. The culture of an organization reflects the values, norms, and principles that inform the behaviors, attitudes, actions, and interactions of its employees. Culture is transmitted to new employees through the process of assimilation, which involves adopting the social patterns of the organization. In hospital organizations, various resources, skills, ideas, and actions come together when safe care is delivered; culture is the overarching theme that guides all the elements and interactions required for delivering safe care at every level of the organization.

In hospital organizations, patient-safety culture is a specific organizational culture that is defined as shared beliefs, values, norms, and practices pertaining to patient safety among the members of a work unit [14] [47]. A patient-safety culture is cultivated through a set of behaviors and organizational conditions that aim to prevent patient harm and raise awareness of patient safety [17]. It guides staff's cognition and decision-making by establishing and emphasizing safety priorities and determining acceptable and objectionable safety behaviors [47] and provides norms and standards that motivate staff to engage in safe practices in their daily routines. Patient-safety culture emerges from all levels of an organization and guides employees' thoughts and behaviors systematically through the establishment of norms and expectations; it reflects the capacity of the hospital as a system to produce safety and is influenced by individual human factors such as perceived stress.

An Organizational Culture of Safety: A Systematic Approach to Error Prevention

Medical errors are considered the third largest cause of death in the United States, claiming over 210,000 lives with an estimated price tag of \$17.1 billion annually [20] [27]. Medical error is understood in contrast with patient safety, which is marked by the absence of medical errors, danger, or adverse events [13]. Reducing medical errors is a national priority and may be achieved by strengthening the patient-safety culture. An organizational culture that is strong on safety is indicative of a systematic approach to error prevention. Improving patient-safety culture is among the standard recommendations for improving patient safety [28] [47]. Research evidence has proven a direct and inverse association between positive patient-safety culture and hospital-acquired conditions [29] [46].

The Significance of Compassion in Organizational Culture

Compassion is defined as a cognitive, affective, and behavioral structure that is comprised of five elements: (a) awareness of suffering, (b) understanding that suffering is universal, (c) empathic resonance with the sufferer, (d) tolerating the undesirable feelings that are aroused, and (e) motivation to act to relieve the suffering [43]. As an essential element of work life, compassion is a powerful, yet overlooked, force in organizational effectiveness [22] [25] [36]. The traditional corporate viewpoint holds that performance and efficiency conflict with humanitarian values such as compassion; however, this view has been challenged fervently [9]. Organizations benefit from encouraging and promoting the quality of compassion. Focus on compassion in an organization can promote a positive image of the organization,

individual and organizational healing, flexibility, resilience, and effectiveness [9]. Compassion at work yields collective benefits including higher levels of shared positive emotions, organizational commitment, and lower turnover rates [15] [25]. The development of compassionate norms in an organization can enhance favorable outcomes in group dynamics and organization-wide processes [4].

In healthcare organizations, a growing body of evidence has highlighted the significance of compassion in providing a high quality of care for patients [4] [8] [18] [33]. Characteristically, healthcare is about maintaining focus on others and their wellbeing. Consequently, compassion is instrumental in maintaining focus on others, seeking greater good for all, and making altruistic efforts [21] [37] [38].

Adverse Effects of Stress and the Role of Compassion as a Buffer

Perceived stress is defined as the extent to which subjects feel their lives are uncontrollable and overwhelming [5]. Nursing is a demanding profession and working under continuous stress makes nurses more prone to making mistakes. Stress is a compromising factor in patient safety and increases the rate of adverse events. Research has shown a correlation between the occurrence of workplace stressful events and the incidence of adverse events. Studies focused on workplace stress and patient safety report that nurses perceive lack of control and professional disagreements among team members as stressful events that compromise patient safety [2] [11].

Stress among nursing staff has been linked to medical errors [2] [10]. Based on the transaction process model of stress [23], workplace stress is characterized as an imbalance between one's ability to perform and the demands of the job. Increased stress is marked by a reduced ability to cope with job demands and adversely affects the patient-safety culture. Compassion could buffer the adverse effects of stress by increasing the adaptive response to stress and improving the individual's ability to receive social support [6]. Additionally, the positive affect and satisfaction that result from being compassionate to others can offset the adverse effects of caring and thus buffers the effects of stressful emotional states [19] [32]. The satisfaction derived from offering compassion may be an internal reserve that shields an individual against stress and prevents burnout by moderating the relationship between job demands and job strain [7].

Purpose

The purpose of this study was to provide empirical evidence for the importance of promoting compassion in healthcare through the investigation of the relationship between registered nurses' compassion, and the four composites of hospital patient-safety culture: (a) frequency of events reported, (b) teamwork within units, (c) teamwork across units, and (d) nonpunitive response to errors. Furthermore, the study explored the potential moderating effect of compassion on registered nurses' perception of stress and patient-safety culture. To examine these relationships, the following hypotheses were developed:

Hypothesis 1. Compassion is correlated with the four composites of patient-safety culture among registered nurses.

Hypothesis 2. Compassion moderates the relationship between perceived stress and the four composites of patient-safety culture among registered nurses.

METHOD

Participants

Participants were 356 registered nurses employed at a private non-profit integrated healthcare system located in a suburban area in the Midwestern region of the United States. A total of 386 participants responded to the invitation email, but 30 of them did not complete the consent process or did not answer any of the survey questions, and were therefore excluded from analyses. The average age of the participants was 41.39. Out of the 356 respondents, 317 (89%) identified as female, 13 (3.7%) identified as male, 2 (.6%) identified as non-binary, and 24 (6.7%) did not specify. A total of 10 (2.8%) participants had a nursing diploma, 28 (7.9%) had an associate's degree, 248 (69.7%) had a bachelor's degree, 45 (12.6%) had a master's degree, 1 (.3%) had a doctorate degree, and 24 (6.7%) did not specify. The majority of respondents (84.8%) indicated having direct patient contact. About a third of the participants (33.4%) had worked as a nurse for 21 years or more. One to five years of experience was the mode of working in the current hospital (37.9%) and the current unit (41.9%). Participation in this study was on a voluntary basis. No exclusion criteria such as full-time status or direct patient contact were used to screen out participants. Three \$40 Amazon gift cards were awarded to randomly selected participants who were invited to take the survey and wished to be entered into a drawing.

Materials

Participants responded to all survey items using a 5-point Likert scale. Perceived stress was measured using a scorable online version of the 10-item Perceived Stress Scale [5]. Compassion was measured using an electronic adaptation of the 24-item Compassion Scale (CS-24) [31]. The four composites of patient-safety culture were measured using four composites of the Hospital Survey on Patient-Safety Culture (HSOPSC) [42]. Questions from the HSOPSC instrument used in this study include 14 items that measure the four composites of (a) frequency of events reported, (b) teamwork within units, (c) teamwork across units, and (d) the nonpunitive response to errors.

Procedure

The sampling method was non-probability convenient sampling. The entire population of registered nurses employed in two hospitals was approximately 1,000 individuals, and all of them were invited to participate. An email with an anonymous link to the data collection survey was used to invite the participants. A consent form was presented to participants at the beginning of the survey, which they were required to agree to in order to proceed. The duration of time to take the survey was estimated to be approximately 15 minutes, and most participants finished within that time. There were no ethical or safety concerns about engaging participants in answering the survey questions. Approval to conduct the study was obtained from the Institutional Review Boards of the institution conducting the study and the data collection sites.

RESULTS

The mean perceived stress score in the sample was 14.86 (SD = 6.37), and was comparable to those reported by recent studies of nurses in other geographical areas that reported a mean perceived stress score of 17.48 (SD = 8.85) in a sample of 252 nurses and a mean perceived stress score of 19.14 (SD = 5.45) in a sample of 284 nurses [1] [24]. The mean compassion score was 4.32 (SD = .43), indicating a moderately high level of compassion among registered nurses. The mean compassion score of 4.32 in this sample is

higher than the mean compassion score of 3.57 (SD = .610) that was reported for a sample of 510 undergraduate students [31]. All the four composites of patient-safety culture had a mean score above 3.0 (the midpoint of each scale), demonstrating a moderately high level of patient-safety culture among the registered nurses across the composites. The teamwork within units composite had the highest mean score of 4.12 (SD = .71), while the nonpunitive response to errors had the lowest mean score of 3.30 (SD = .94). The teamwork across units composite had a mean score of 3.51 (SD = .75), while the frequency of events reported had a mean score of 3.62 (SD = .75). Table 1 provides a summary of all the scores obtained.

TABLE 1

Descriptive Statistics of the Scores

Variable	N		Mean	SD	Min	Max
	Valid	Missing				
Perceived Stress	342	14	14.86	6.37	0.00	33
Compassion	337	19	4.32	0.43	2.79	5
Frequency of events reported	348	8	3.62	0.75	1.67	5
Teamwork within units	349	7	4.12	0.71	1.00	5
Teamwork across units	344	12	3.51	0.75	1.25	5
Nonpunitive response to errors	352	4	3.30	0.94	1.00	5

Reliability Coefficients

In this study, PPS-10 yielded a higher alpha level ($\alpha = .89$; $N = 316$) than what was previously reported among registered nurses. In a study of 252 nurses, the Cronbach’s alpha for the PSS-10 was reported to be .81 [1]. For the CS-24, the alpha reliability level of .81 ($N = 313$) reported here is comparable to the pre- and post-intervention values of .81 and .77 reported in a previous study of 90 registered nurses [26]. Among the HSOPSC composites, the highest alpha level was observed in the teamwork across units composite ($\alpha = .86$; $N = 318$), and the lowest alpha level was observed in the teamwork within unit composite ($\alpha = .75$; $N = 323$). For the teamwork across units composite of HSOPSC, the Cronbach's alpha reliability coefficient was reported as .86 and is higher than values reported in previous studies of registered nurses ranging from .68 to .79 [3] [41]. For the teamwork within units composite of HSOPSC, the Cronbach's alpha reliability coefficient was reported as .75 and was lower than values reported in previous studies ranging from .79 to .83 [3] [41]. For the frequency of events reported composite of HSOPSC, the Cronbach's alpha reliability coefficient was reported as .80 ($N = 322$) and is comparable to the values reported in previous studies of registered nurses ranging from .78 to .85 [3] [41]. For the nonpunitive response to errors composite of HSOPSC, the Cronbach's alpha reliability coefficient was reported as .81 ($N = 326$) and is higher than values reported in previous studies of registered nurses ranging from .75 to .78 [3] [41]. Table 2 summarizes the Cronbach’s alpha reliability statistics for all the scales.

TABLE 2**Cronbach's Alpha Reliability Statistics (N = 356)**

Scale	Cronbach's alpha	Valid N	N of items
Perceived Stress Scale (PSS-10)	0.89	316	10
Compassion Scale (CS-24)	0.81	313	24
HSOPSC - Frequency of events reported	0.8	322	3
HSOPSC - Teamwork within units	0.75	323	4
HSOPSC - Teamwork across units	0.86	318	4
HSOPSC - Nonpunitive response to errors	0.81	326	3

Compassion Correlated with the Organizational Culture

To test the hypothesis that compassion correlates with the four composites of patient-safety culture, bivariate correlations were computed. There was a weak positive correlation between registered nurses' compassion and the four composites of patient-safety culture: (a) frequency of events reported $r(331) = .153, p < .01$, (b) teamwork within units, $r(331) = .246, p < .001$, (c) teamwork across units, $r(332) = .323, p < .001$, and (d) nonpunitive response to errors, $r(334) = .151, p < .01$. For each of the four composites of the patient-safety culture, the overall model was significant with small effect size represented by weak positive correlation coefficients ranging from .15 for the nonpunitive response to errors composite to .32 for teamwork across units composite. Table 3 presents the results of the correlation analyses between compassion and the four composites of patient-safety culture.

TABLE 3**Correlation Analysis - Compassion and Composites of Patient-Safety Culture**

Composite of culture	r	N	p
HSOPSC - Frequency of events reported	.153	331	$p < .01$
HSOPSC - Teamwork within units	.246	331	$p < .001$
HSOPSC - Teamwork across units	.323	332	$p < .001$
HSOPSC - Nonpunitive response to errors	.151	334	$p < .01$

Compassion and Stress as Predictors of the Organizational Culture

To test the hypothesis that compassion moderates the relationship between perceived stress and the four composites of patient-safety culture, hierarchical multiple regression analyses were conducted. For each of the four composites, the overall model was not significant suggesting that there was not enough evidence to support compassion as a moderator in the studied sample. Perceived stress and compassion

accounted for a significant amount of variance (4%) in frequency of events reported $R^2 = .041$, $F(2, 323) = 6.922$, $p < .01$. The interaction term between perceived stress and compassion did not account for a significant proportion of the variance in frequency of events reported, $\Delta R^2 = .004$, $\Delta F(1, 322) = 1.310$, $p = .253$, $b = .021$, $t(322) = 1.144$, $p = .253$. However, perceived stress and compassion had significant parameter estimates in the first step of the hierarchical model leading to the conclusion that they have individual, additive effects on the frequency of events reported composite of the patient-safety culture. Table 4 presents the results for the hierarchical regression analysis for the frequency of events reported composite.

TABLE 4

Hierarchical Regression - Frequency of Events Reported Composite of Patient-Safety Culture

Step	Model variable	b	β	t	p	R	R ²	ΔR^2	ΔF
1	Model				0.001	0.203	0.041	0.041	6.922
	Constant	2.495		5.435	0.000				
	Perceived Stress	-0.012	-0.098	-1.774	0.077				
	Compassion	0.299	0.164	2.987	0.003				
2	Model				0.253	0.212	0.045	0.004	1.310
	Constant	3.939		2.934	0.004				
	Perceived Stress	-0.102	-0.863	-1.286	0.199				
	Compassion	-0.030	-0.016	-0.097	0.923				
	Perceived Stress x Compassion	0.021	0.763	1.144	0.253				

Perceived stress and compassion accounted for a significant amount of variance (8%) in teamwork within units $R^2 = .082$, $F(2, 320) = 14.237$, $p < .001$. The interaction term between perceived stress and compassion did not account for a significant proportion of the variance in teamwork within units, $\Delta R^2 = .002$, $\Delta F(1, 319) = .648$, $p = .421$, $b = -.014$, $t(319) = -.805$, $p = .421$. However, perceived stress and compassion had significant parameter estimates in the first step of the hierarchical model leading to the conclusion that they have individual, additive effects on the teamwork within units composite of the patient-safety culture. Table 5 presents the results for the hierarchical regression analysis for the teamwork within units composite.

TABLE 5

Hierarchical Regression - Teamwork Within Units Composite of Patient-Safety Culture

Step	Model variable	b	β	t	p	R	R ²	ΔR^2	ΔF
1	Model				0.000	0.286	0.082	0.082	14.237
	Constant	2.721		6.384	0.000				
	Perceived Stress	-0.017	-0.151	-2.800	0.005				
	Compassion	0.382	0.222	4.108	0.000				
2	Model				0.421	0.289	0.084	0.002	0.648
	Constant	1.765		1.399	0.163				
	Perceived Stress	0.043	0.381	0.574	0.566				
	Compassion	0.600	0.349	2.099	0.037				
	Perceived Stress x Compassion	-0.014	-0.531	-0.805	0.421				

Perceived stress and compassion accounted for a significant amount of variance (15%) in teamwork across units $R^2 = .150$, $F(2, 327) = 28.845$, $p < .001$. The interaction term between perceived stress and compassion did not account for a significant proportion of the variance in teamwork across units, $\Delta R^2 = .005$, $\Delta F(1, 326) = 2.008$, $p = .157$, $b = -.023$, $t(326) = -1.417$, $p = .157$. However, perceived stress and compassion had significant parameter estimates in the first step of the hierarchical model leading to the conclusion that they have individual, additive effects on the teamwork across units composite of the patient-safety culture. Table 6 presents the results for the hierarchical regression analysis for the teamwork across units composite.

TABLE 6

Hierarchical Regression - Teamwork Across Units Composite of Patient-Safety Culture

Step	Model variable	b	β	t	p	R	R ²	ΔR^2	ΔF
1	Model				0.000	0.387	0.150	0.150	28.845
	Constant	1.664		4.015	0.000				
	Perceived Stress	-0.026	-0.217	-4.225	0.000				
	Compassion	0.517	0.294	5.710	0.000				
2	Model				0.157	0.394	0.155	0.005	2.008
	Constant	0.041		0.034	0.973				
	Perceived Stress	0.076	0.639	1.054	0.293				
	Compassion	0.887	0.504	3.209	0.001				
	Perceived Stress x Compassion	-0.023	-0.858	-1.417	0.157				

Perceived stress and compassion accounted for a significant amount of variance (7%) in nonpunitive response to errors $R^2 = .069$, $F(2, 324) = 12.027$, $p < .001$. The interaction term between perceived stress and compassion did not account for a significant proportion of the variance in nonpunitive response to errors, $\Delta R^2 = .000$, $\Delta F(1, 323) = .022$, $p = .883$, $b = .004$, $t(323) = .148$, $p = .883$. However, perceived

stress and compassion had significant parameter estimates in the first step of the hierarchical model leading to the conclusion that they have individual, additive effects on the nonpunitive response composite of the patient-safety culture. Table 7 presents the results for the hierarchical regression analysis for the nonpunitive response to errors composite.

TABLE 7

Hierarchical Regression - Nonpunitive Response to Errors Composite of Patient-Safety Culture

Step	Model variable	b	β	<i>t</i>	<i>p</i>	<i>R</i>	<i>R</i> ²	ΔR^2	ΔF
1	Model				0.000	0.263	0.069	0.069	12.027
	Constant	2.793		5.013	0.000				
	Perceived Stress	-0.035	-0.231	-4.291	0.000				
	Compassion	0.237	0.104	1.931	0.054				
2	Model				0.883	0.263	0.069	0.000	0.022
	Constant	3.031		1.781	0.076				
	Perceived Stress	-0.050	-0.334	-0.477	0.634				
	Compassion	0.183	0.080	0.474	0.636				
	Perceived Stress x Compassion	0.004	0.104	0.148	0.883				

DISCUSSION

All of the scales and composites used in this study had reliability coefficients at or above 0.75 and were considered sufficiently reliable measures for the studied sample of registered nurses. The results showed that compassion is positively correlated with the four composites of patient-safety culture. For each of the four composites, the overall model was significant with a small effect size. Effect size magnitude was represented by weak positive correlation coefficients ranging from .15 to .32. Given the immense scope and severe consequences of medical errors in terms of human life and capital, even a small effect size may offer practical significance by underlining the importance of cultivating compassion in registered nurses. The results of this study did not support the role of compassion as a moderator. However, the two independent variables of perceived stress and compassion had significant parameter estimates in the first step of the hierarchical model used for moderation analysis, leading to the conclusion that they have individual, additive effects on patient-safety culture. More specifically, stress and compassion combined accounted for 4 to 15% of the variance in patient-safety culture in the studied sample of nurses.

Implications for Practice

The results provided evidence for the importance of compassion in patient-safety culture by showing that compassion has a significant weak positive correlation with at least four composites of patient-safety culture. Compassion continues to remain a potent force in healthcare organizations [4] [8] [18] [33]. Compassionate individuals take a more balanced approach to negative emotions by recognizing that suffering and personal inadequacy are a part of the shared human experience [30]. Hospital leaders should create a work environment where employees feel safe and supported to give and receive compassion. Implications of this finding include the identification of compassion as an influencer of culture in healthcare organizations that requires further research.

The study showed that perceived stress and compassion both have individual, additive effects on the four composites of the patient-safety culture. This finding amplifies previous findings and reinforces the practical value of promoting compassion within healthcare organizations [40]. The results suggest that there is a great opportunity to improve the safety of patients and the wellbeing of the nursing staff in hospitals through emphasizing and promoting a safe and compassionate culture of care. The findings of this study imply that in hospital organizations, efforts to reduce and manage stress contribute to a stronger patient-safety culture and have implications for healthcare administrators, leaders, and scholars. These findings are consistent with previous research evidence for the integral role of stress management in promoting a strong safety culture [45]. A recent meta-analysis of HSOPSC composite scores of 33 articles reporting on 21 countries reported that nonpunitive response to errors is among the weakest and most underdeveloped aspects of patient-safety culture [35]. This study confirms the value of improving the nonpunitive response to error composite of patient-safety culture and the probable influence of cultivating compassion in organizational culture to reduce the stress associated with punishment in achieving such an improvement.

Limitations

This study had several limitations in its population validity, temporal validity, and statistical validity that should be considered in the interpretation of its results. Although meeting the conventional standards of the field, the reliability, content, criterion-related, and construct validity of the survey instruments used in the study were not perfect. A new reliable measure of compassion with a strong construct validity would be ideal. Random sampling was impractical and beyond the scope of the study. The sample was relatively homogenous, and potential confounding variables such as organizational values were not measured. The element of social desirability appears to be a noteworthy source of self-report bias in measuring positive attributes such as compassion. A cross-sectional design does not capture the longitudinal interactions between the studied variables.

Future Research Directions

Future research should replicate this study with a diverse sampling frame that represents different hospitals in various geographical areas and different healthcare settings. Compassion was proposed as a potential moderator of the relationship between perceived stress and patient-safety culture. Although no significant moderation was detected in the studied sample, other relationships may exist that require further investigation to be fully explained. Future research in this area employing a new reliable measure of compassion with a strong construct validity is highly recommended. The science of compassion is an emerging field that requires psychometrically robust instruments to advance [12]. Other researchers have called for the development of a new scale for compassion [16] [43].

Conclusion

The findings from this study showed a weak positive correlation between registered nurses' compassion and the four composites of patient-safety culture: (a) frequency of events reported, (b) teamwork within units, (c) teamwork across units, and (d) nonpunitive response to errors. Given the immense scope and severe consequences of lack of safety in terms of human life and capital, even a small effect size may offer practical significance by underlining the importance of compassion in the culture of healthcare organizations. These findings confirmed that compassion should be included in considerations for improving patient safety by means of improving patient-safety culture. The results also showed that along

with perceived stress, compassion has an individual, additive effect on the four composites of the patient-safety culture. Stress and compassion accounted for up to 15% of the variance in patient-safety culture in the studied sample of nurses. The findings provided evidence for the importance of compassion in patient-safety culture and point at the potential benefits of cultivating compassion as a means of improving the organizational culture and the welfare of patients and providers.

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