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Mediating effect of learning behavior on psychological safety and job performance of nursing professionals

Efecto mediador del comportamiento de aprendizaje en la seguridad psicológica y el desempeño laboral de los profesionales de enfermería

Efeito mediador do comportamento de aprendizagem na segurança psicológica e no desempenho profissional dos enfermeiros

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ABSTRACT

Objective: To determine the mediating effect of learning behavior in the work context of a public hospital and a private hospital.

Methods: A descriptive, cross-sectional correlational study. The sample consisted of 289 nursing professionals. The study was carried out from January to June 2023, in Monterrey, Nuevo León, Mexico. The Psychological Safety in Healthcare Teams Instrument, the Group Learning Environment Instrument, and the Job Performance in Hospital Nurses Instrument were used. Descriptive statistics and non-parametric inferential statistics, including Spearman's correlation, Mann-Whitney U test, and Multiple Linear Regression with the Bootstrap method, were applied.

Results: A significant relationship was observed between psychological safety and learning behavior ($\rho = .672, p < .01$) and between psychological safety and job performance ($\rho = .276, p < .01$). Furthermore, a significant relationship was observed between learning behavior and job performance ($\rho = .384, p < .01$). Learning behavior was also found to be a mediating variable ($\beta = 0.213, p < .001$).

Conclusion: The findings highlight the relationship among the three study variables, as well as the mediating effect of learning behavior in the overall analysis and within the public institution.

Descriptors: Psychological safety; Social learning; Job performance; Nursing.

RESUMEN

Objetivo: Determinar el efecto mediador del comportamiento de aprendizaje en el contexto laboral de un hospital público y uno privado.

Metodología: Estudio descriptivo correlacional de corte transversal. La muestra se conformó por 289 profesionales de enfermería. El período de estudio fue de enero a junio del 2023, en Monterrey Nuevo León, México. Se utilizó el instrumento de seguridad psicológica en equipos de atención médica, el de entorno de aprendizaje grupal y el de desempeño laboral en enfermeras(os) de hospitales. Se aplicó la estadística descriptiva y estadística inferencial no paramétrica como Correlación de Spearman, U de Mann-Whitney y Regresión Lineal Múltiple con método Bootstrap.

Resultados: Se obtuvo una relación significativa entre la seguridad psicológica con el comportamiento de aprendizaje ($\rho = .672, p < .01$) y con el desempeño laboral ($\rho = .276, p < .01$), además, una relación significativa entre el comportamiento de aprendizaje y el desempeño laboral ($\rho = .384, p < .01$). Asimismo, se encontró que el comportamiento de aprendizaje es una variable mediadora ($\beta = 0.213, p < .001$).

Conclusión: Los hallazgos destacan la existencia de relación entre las tres variables de estudio, así como también el efecto mediador del comportamiento de aprendizaje en el análisis global y en la institución pública.

Descriptor: Seguridad psicológica; Aprendizaje social; Rendimiento laboral; Enfermería

RESUMO

Objetivo: Determinar o efeito mediador do comportamento de aprendizagem no contexto laboral de um hospital público e um privado.

Metodologia: Estudo descritivo correlacional de corte transversal. A amostra foi composta por 289 profissionais de enfermagem. O período de estudo foi de janeiro a junho de 2023, em Monterrey, Nuevo León, México. Utilizou-se o instrumento de segurança psicológica em equipes de atenção médica, o de ambiente de aprendizagem grupal e o de desempenho laboral em enfermeiros de hospitais. Aplicou-se estatística descritiva e estatística inferencial não paramétrica, como Correlação de Spearman, U de Mann-Whitney e Regressão Linear Múltipla com método Bootstrap.

Resultados: Obteve-se uma relação significativa entre a segurança psicológica e o comportamento de aprendizagem ($\rho = 0,672$; $p < 0,01$) e com o desempenho laboral ($\rho = 0,276$; $p < 0,01$); além disso, uma relação significativa entre o comportamento de aprendizagem e o desempenho laboral ($\rho = 0,384$; $p < 0,01$). Constatou-se também que o comportamento de aprendizagem é uma variável mediadora ($\beta = 0,213$; $p < 0,001$).

Conclusão: Os achados destacam a existência de relação entre as três variáveis do estudo, bem como o efeito mediador do comportamento de aprendizagem na análise global e na instituição pública.

Descritores: Segurança psicológica; Aprendizagem social; Desempenho no trabalho; Enfermagem

INTRODUCTION

The quality and safety of care are priority aspects in healthcare systems and they are particularly significant considering that, worldwide, four out of ten patients suffer some harm associated with healthcare⁽¹⁾ and up to 15% of hospital expenditure is attributed to performance errors⁽²⁾. Evidence highlights that psychological safety, learning behavior, and job performance of nursing professionals are key elements that may impact the quality and safety of care⁽³⁻⁵⁾.

Psychological safety refers to the level of communication and trust developed by nursing professionals to express doubts, viewpoints, ideas, perceptions, needs, and even errors to their supervisors, leaders, and coworkers⁽⁶⁾. This feeling arises from the individual's perception of their work environment, according to organizational, team-related, and individual factors^(3,7,8).

Organizational factors include characteristics of the work environment, such as healthcare challenges, resources⁽⁹⁾, systems, organization⁽⁴⁾, policies⁽⁷⁾ and the regulations of each hospital⁽¹⁰⁾. Likewise, factors related to the healthcare team are associated with social aspects such as experiences, status, hierarchy⁽³⁾, support, communication, and the behavior of coworkers, supervisors, leaders, or members of the multidisciplinary team^(5,8).

Finally, individual factors refer to personality^(3,4), values, and age⁽¹¹⁾. A positive perception of these factors leads nursing professionals to feel satisfied^(12,13), motivated, committed, empowered⁽⁴⁾, appreciated, and recognized, while also able to speak and act without fear of negative consequences. Conversely, a negative perception fosters insecurity, defensive attitudes, fear, and reluctance to pursue professional development⁽¹⁵⁾.

The Organizational Learning Model (OLM)⁽⁶⁾, which provides the theoretical framework for this study, highlights that psychological safety fosters behaviors that facilitate and enhance learning. Therefore, the first hypothesis proposed for this study was:

H₁: Psychological safety is associated with the learning behavior of nursing professionals.

Learning behaviors consist of cognitive actions, such as feedback, experimentation, analysis, reasoning, and dialogue regarding errors or outcomes that facilitate the acquisition, retention, and processing of information^(6,12). Among nursing professionals, these behaviors foster interaction with multidisciplinary team members, creating learning opportunities and promoting the development of more critical thinking enabling them to adapt to the work environment, improve their skills, and reduce errors⁽¹⁶⁾.

Moreover, these behaviors enhance creativity, reasoning, and problem-solving capabilities within work teams^(15,17), thereby contributing to the development of a more competitive organization with better performance⁽¹⁸⁾. In this regard, the second hypothesis was proposed:

H₂: Learning behavior is positively associated with the job performance of nursing professionals.

Job performance refers to the competencies, skills, and aptitudes that nursing professionals possess to carry out their duties, demonstrating both theoretical and practical knowledge⁽¹⁸⁾. This construct is aimed at meeting patients' needs and expectations in order to achieve the best possible health outcomes⁽⁶⁾.

According to the evidence, job performance depends on the acquisition of information that enhances learning rather than directly on workers' perceptions of their work context⁽¹¹⁾. In this regard, the OLM model highlights that psychological safety does not have a direct effect on job performance, instead, it exerts an indirect or mediated effect through learning behavior⁽⁶⁾, thus, the third hypothesis was proposed.

H₃: Learning behavior acts as a mediating variable between psychological safety and the job performance of nursing professionals.

Although the model does not identify a direct association between psychological safety and job performance, a review of the evidence revealed studies that find such a relationship between the variables. Therefore, communication, trust, and interaction within healthcare institutions may influence the job performance of nursing professionals^(3,4,19), thus, the fourth hypothesis was proposed:

H4: Psychological safety is positively associated with the job performance of nursing staff

Despite advances in research, psychological safety, learning behavior, and job performance remain scarcely explored in hospital settings. Most studies have been conducted in companies or organizations outside the healthcare field, highlighting a gap in scientific knowledge applied to this sector^(20,21). This study seeks to contribute to the nursing field by providing a deeper understanding of the phenomena influencing professional practice and the quality of care.

Thus, the objective of this study was to determine the mediating effect of learning behavior on the relationship between psychological safety and job performance of nursing professionals in public and private hospital work settings, as well as to identify the relationships among these study variables.

METHOD

This study employed a cross-sectional correlational design and was conducted in two tertiary-level hospitals located in the metropolitan area of Monterrey, Nuevo León, Mexico, one public hospital and one private hospital. The public hospital has 600 census beds, while the private hospital has 400. Both hospitals offer highly specialized services such as cardiology, oncology, neurology, surgery, gynecology, and pediatrics. A key difference between the two institutions lies in the populations they serve, the public hospital provides care to the general public and vulnerable groups within the state, whereas the private hospital primarily serves patients with greater financial means.

Population, sampling, and sample

The study population consisted of nursing professionals from two healthcare institutions. A non-probability convenience sampling method was used. Nursing professionals were invited in person by the main researcher, who visited the inpatient and emergency departments of both hospitals. Those who agreed to participate were provided with a QR (Quick Response) code that directed them to a WhatsApp chat, which automatically sent the informed consent form required to participate in the study.

Afterwards, instructions for completion and the questionnaires were sent to participants, to be completed at a time that did not interfere with their work duties. They were asked to

submit a screenshot upon completing the questionnaires. In the absence of a response, daily reminders were sent for three consecutive days. If no response was received by the end of the third day, the case was considered part of the refusal rate.

The sample size was estimated using the statistical package G*Power, version 3. The sample size was estimated using the G*Power statistical package, version 3.1⁽²²⁾, through a correlation analysis, considering a significance level of .05, a coefficient of determination of 0.19 (small effect size)⁽²³⁾ and a statistical power of 90%. The estimated sample size was 289 nursing professionals. A total of 307 eligible professionals were invited to participate, of whom 289 completed the questionnaires (150 from the public sector and 139 from the private sector), thereby achieving the estimated sample size. Eighteen individuals did not respond, corresponding to a refusal rate of 6%.

The profile of the nursing professionals included in this study comprised individuals of both sexes and various age groups, with educational backgrounds ranging from nursing assistant to higher education levels, and with at least six months of work experience at the institution. Both permanent and temporary staff were considered, regardless of work shift (morning, evening, night, weekend, or holiday shifts), administrative or clinical position, and assigned to different hospital services.

Instruments

Data collection involved a sociodemographic questionnaire (age, education, work experience, service area, and professional category) and three instruments with adequate validity and reliability. The first was the Psychological Safety in Healthcare Teams Questionnaire, consisting of 19 items, with a Cronbach's alpha ranging from .87 to .95. This instrument was designed to measure professionals' perceptions of their ability to express ideas, doubts, needs, or errors within the work team. For analysis, mean scores were calculated based on responses provided on a Likert scale (1 = strongly disagree to 7 = strongly agree).

The second instrument was the Group Learning Environment Questionnaire, from which only the learning behavior dimension was used. This dimension comprises seven items and has a Cronbach's alpha of .92. It assesses key behaviors related to care, decision-making, and empathy. Interpretation was based on the calculation of the mean scores for the items, using a Likert-type scale (1 = rarely to 5 = very frequently).

Finally, the Job Performance in Hospital Nurses Questionnaire was used consisting of 39 items, with Cronbach's alpha values ranging from 0.77 to 0.98. This instrument measures the fulfillment of clinical functions by nursing staff. For interpretation, the mean score of responses was calculated using a Likert-type scale (1 = never to 5 = always). Analysis using mean scores facilitates comparison across studies and subsequent methodological replicability^(12, 19, 24).

The original versions of the three instruments were in English, therefore, they were translated into Spanish by a certified translator. Subsequently, semantic and conceptual equivalence with the original versions was verified, resulting in a final Spanish version.

The study complied with ethical principles established for research involving human beings, in accordance with the Regulations of the General Health Law on Health Research in Mexico. It also received approval from the Research Ethics Committee⁽²³⁾. Participants voluntarily provided informed consent and were guaranteed confidentiality, privacy, dignity, anonymity of the data provided, and the freedom to withdraw from the study at any time without repercussions.

Data analysis

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 27. A descriptive analysis was performed, including frequencies and percentages, measures of central tendency, and measures of dispersion. Data distribution was assessed using the Kolmogorov-Smirnov test with the Lilliefors correction, revealing that the data did not follow a normal distribution. Consequently, non-parametric statistics were employed: the Spearman's rho (ρ) correlation test and a multiple linear regression model using the bootstrapping method to determine the relationships and effects of the study variables. The Mann-Whitney U test was also used to compare groups. Finally, a mediation analysis was conducted using the PROCESS Macro (Model 4), an extension for IBM SPSS®.

RESULTS

A total of 289 participants were included, the majority were female (77.9%), and a bachelor's degree was the most common educational level (59.9%). Most worked in the public sector (51.9%), with the night shift (41.2%) and operational staff (93.8%) being the most represented groups. The mean age was 31.36 years ($SD = 7.91$). The average duration of formal

nursing education was 4.67 years ($SD = 1.08$). Regarding work experience at the institution exceeding six months, the mean was 89.42 months ($SD = 85.28$), representing 7 years.

Regarding psychological safety, assessed on a Likert scale ranging from 1 to 7, the results indicated that the communication ($M = 4.55$; $SD = 2.28$) and trust ($M = 4.49$; $SD = 2.27$) dimensions among nursing professionals were at a level close to “somewhat agree.” When comparing by type of institution (public and private), the response patterns for the items were similar in both institutions.

Regarding learning behavior measured on a scale from 1 to 5, nursing professionals were found to usually discuss their errors and possible solutions ($M = 3.65$; $SD = 1.23$), seek feedback from colleagues ($M = 3.62$; $SD = 1.24$), and tend to view differences of opinion as learning opportunities ($M = 3.49$; $SD = 1.25$).

Regarding job performance, assessed on a scale from 1 to 5, it was found that nursing professionals almost always perform technical activities such as measuring vital signs ($M = 4.65$; $SD = 0.79$), administering treatments and medications ($M = 4.70$; $SD = 0.72$), and evaluating the effectiveness of the care provided ($M = 4.66$; $SD = 0.66$). However, they placed less importance on supportive activities such as taking extra time to attend to family needs ($M = 2.55$; $SD = 1.28$). Likewise, they only occasionally volunteer to share their experiences and knowledge ($M = 3.70$; $SD = 1.09$) or voluntarily participate in hospital committees or meetings ($M = 3.56$; $SD = 1.15$). When analyzing job performance by institution type, higher mean scores were identified in the private institution across several indicators.

Correlations between the study variables were analyzed both overall and by institution type (Table 1). Overall, a strong positive correlation was found between psychological safety and learning behavior. When examining the institutions individually, this relationship was particularly strong in the private institution ($\rho = .690$, $p < .01$). Furthermore, learning behavior showed a positive association with job performance, with this relationship being more pronounced in the public institution ($\rho = .405$, $p < .01$). Finally, a significant correlation was identified between psychological safety and job performance specifically in the private institution ($\rho = .319$, $p < .01$).

Table 1. Relationship between study variables: Spearman's correlation coefficient. Monterrey, Nuevo León, Mexico, 2023.

Institution	n	Variables	1	2	3
Public and private	289	1. Psychological safety	-		
		2. Learning behavior	.672**	-	
		3. Job performance	.276**	.384**	-
Public	150	1. Psychological safety	-		
		2. Learning behavior	.660**	-	
		3. Job performance	.237**	.405**	-
Private	139	1. Psychological safety	-		
		2. Learning behavior	.690**	-	
		3. Job performance	.319**	.296**	-

Source: Research data.

Note. n = number of cases, ρ = Spearman's correlation coefficient; p = two-tailed significance. ** $p < .01$. 1 = Psychological safety. 2 = Learning behavior. 3 = Job performance.

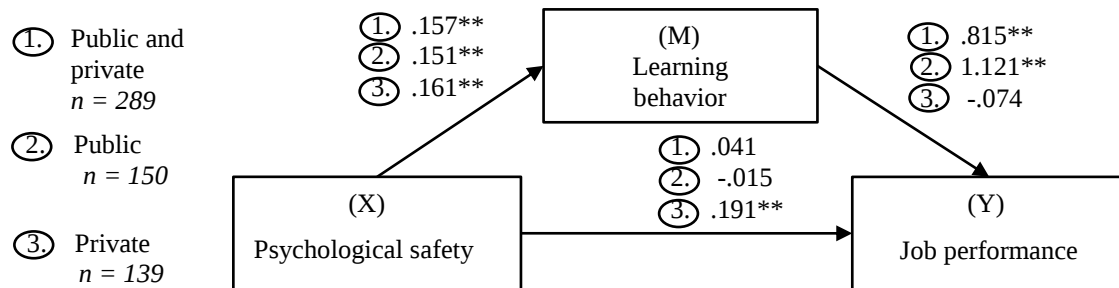
When analyzing differences in the study variables by institution type, a significant difference was found in learning behavior ($U = 8376$, $p = .004$) and job performance ($U = 6344$, $p < .001$), with higher mean rank scores observed in the private institution.

On the other hand, Table 2 shows the effect of psychological safety and learning behavior on job performance using a Multiple Linear Regression Model with the Bootstrap method (10,000 simulated samples). The results suggest that learning behavior has a positive and significant effect on job performance ($\beta = 0.303$, $p < .001$) overall, as well as in the public institution ($\beta = 0.409$, $p < .001$). In contrast, a significant effect of psychological safety on job performance was identified in the private institution ($\beta = 0.373$, $p < .05$).

Finally, Table 3 presents the results of the mediation model derived from the OLM. Prior to the analysis, the assumptions of the linear regression model were verified, including the absence of multicollinearity among predictor variables, homoscedasticity, and independence of residuals. The obtained indicators confirmed that these assumptions were not violated; therefore, the analysis proceeded. The results showed that learning behavior acts as a mediating variable in the relationship between psychological safety and job performance in the

overall analysis ($\beta = 0.213$, $p < .001$) and in the public institution ($\beta = 0.275$, $p < .001$). However, this mediation effect was not significant in the private institution ($\beta = -0.023$, $p = .793$). A graphical representation of the mediation model is presented in Figure 1.

Figure 1. Mediation model of learning behavior regarding psychological safety and job performance among nursing professionals. Monterrey, Nuevo León, Mexico, 2023.



Source: Research data, 2023.

Note. Unstandardized estimated mediation effect by type of institution: 1. Public and private, 2. Public, and 3. Private *** < .001

Table 2. Multiple Linear Regression Model of study variables regarding job performance
Monterrey, Nuevo León, Mexico, 2023.

Institution	Linear Regression Model	SS	df		MS	F	p	
Public and Private n = 289	Regression	16,234.34	2		8,117.17	20.68	<.001	
	Residual	112,252.00	286		392.49			
	R ² = 12%							
Public n = 150	Regression	10,183.04	2		5091.52	13.35	<.001	
	Residual	56045.14	147		381.25			
	R ² = 14.2%							
Private n = 139	Regression	5,878.23	2		2,939.11	9.48	<.001	
	Residual	42,134.70	136		309.81			
	R ² = 11%							
Institution	Variables	Unstandardized coefficients	Standardized coefficients		Significance		95% CI for β	
		B	SE	β	t	p	LL	UL
Public and private n = 289	(Constant)	130.40	3.95	-	33.0	<.001	122.63	138.18
	Psychological safety	.042	.047	.070	.895	.372	-.050	.134
	Learning behavior	.816	.209	.303	3.89	<.001	.404	1.22

Public n = 150	(Constant)	122.56	5.37	-	22.8	<.001	111.94	133.18
	Psychological safety	-.016	.063	-.025	-.248	.804	-.141	.109
	Learning behavior	1.121	.282	.409	3.98	<.001	.564	1.678
Private n = 139	(Constant)	146.12	5.22	-	27.99	<.001	135.8	156.45
	Psychological safety	.192	.062	.373	3.09	.002	.069	.314
	Learning behavior	-.074	.285	-.031	-.260	.795	-.638	.490

Source: Research data, 2023.

Note. *SS* = Sum of Squares; *df* = degrees of freedom; *MS* = Mean Square; *F* = *F* statistic; *p* = significance level; *R*² = Coefficient of determination; *B* = *B* statistic; *SE* = Standard Error; β = beta statistic; *t* = t-test; *CI* = Confidence interval; *LL* = Lower limit; *UL* = Upper limit.

Table 3. Direct and indirect effects of psychological safety, learning behavior, and job performance of nursing professionals. Monterrey, Nuevo León, Mexico, 2023.

Institution	Type	Effect	Estimate	SE	95% CI		β	Z	p	% mediation
					Lower	Upper				
Public and private n = 289	Indirect	PS $\rightarrow$ LB $\rightarrow$ JP	.128	.033	.062	.194	.213	3.81	<.001	
	Component	PS $\rightarrow$ LB	.157	.009	.138	.175	.703	16.81	<.001	75.4
		LB $\rightarrow$ JP	.815	.208	.408	1.224	.303	3.91	<.001	
	Direct	PS $\rightarrow$ JP	.041	.046	-.049	.133	.069	.900	.368	24.6
	Total	PS $\rightarrow$ JP	.170	.033	.103	.237	.282	5.00	<.001	100

Public n = 150	Indirect	PS $\rightarrow$ LB $\rightarrow$ JP	.169	.044	.082	.258	.275	3.78	<.001	
	Component	PS $\rightarrow$ LB	.151	.013	.124	.178	.674	11.18	<.001	91.53
		LB $\rightarrow$ JP	1.121	.278	.575	1.67	.408	4.02	<.001	
	Direct	PS $\rightarrow$ JP	-.015	.062	-.138	.107	-.025	-.251	.802	8.47
	Indirect	PS $\rightarrow$ JP	.154	.048	.058	.250	.250	3.15	.002	100
Private n = 139	Indirect	PS $\rightarrow$ LB $\rightarrow$ JP	-.012	.045	-.101	.077	-.023	-.263	.793	
	Component	PS $\rightarrow$ LB	.161	.012	.137	.186	.744	13.13	<.001	5.87
		LB $\rightarrow$ JP	-.074	.282	-.627	.479	-.031	-.263	.793	
	Direct	PS $\rightarrow$ JP	.191	.061	.072	.312	.372	3.13	.002	94.13
	Indirect	PS $\rightarrow$ JP	.179	.041	.099	.260	.349	4.37	<.001	100

Source: Research data, 2023.

Nota. *SE* = Standard error; *CI* = Confidence interval; β = beta statistic; *Z* = standardized score; *p* = significance level; PS = Psychological safety; LB = Learning behavior; JP = Job performance

DISCUSSION

The present study identified learning behavior as a mediating variable in the relationship between psychological safety and job performance, both in the overall analysis and specifically within the public institution. In this sense, the impact of psychological safety on job performance is not direct but rather operates through learning behavior. This demonstrates that psychological safety alone does not guarantee optimal job performance, instead, it is through the promotion of learning behaviors that work outcomes are enhanced.

These findings are consistent with previous studies^(11,31), as well as with the Organizational Learning Model⁽⁶⁾ which posits that psychologically safe environments foster learning dynamics that, in turn, influence performance. However, to date, there is limited empirical evidence specifically examining the mediating role of learning behavior in the relationship between psychological safety and job performance. Furthermore, this study contributes an important perspective by analyzing two distinct institutional contexts: public and private.

The analysis revealed that the mediating effect was not significant in the private institution. This difference could be attributed to contextual factors, such as organizational climate, leadership styles, and specific working conditions that influence teamwork dynamics. Even in environments with greater material resources, a lack of cohesion and collaboration among professionals can limit the positive impact of psychological safety on job performance⁽²⁶⁾.

On the other hand, although the public institution may have more limited resources, it is possible to foster an organizational culture based on cooperation, transformational or transactional leadership, and teamwork coordination, that are elements that promote psychological safety and stimulate learning behaviors that impact job performance⁽²⁷⁾. This teamwork environment may have amplified the mediating role of learning behavior, allowing it to emerge both in the overall analysis and within that specific institution.

Conversely, the absence of mediation in the private institution could be related to greater variability in working conditions, more individualized leadership styles, or differences in resource allocation⁽²⁸⁾. It is possible that these aspects reduced the consistency of the participants' perceptions and, consequently, weakened the mediating effect. Additionally, the unequal distribution of sample sizes between the two institutions and the variability in participant responses may have influenced the results.

Descriptively, it was observed that nursing professionals expressed low levels of agreement regarding the interactions and relationships they keep with their leaders, colleagues, and work teams. This finding aligns with a study involving nurses in Germany, where participants highlighted the need for greater trust when sharing their views or comments with coworkers⁽²⁹⁾. However, it differs from a study conducted in the United States, where most nurses reported greater openness in discussing problems and difficult issues with coworkers and leaders⁽¹³⁾.

Regarding learning behavior, participants indicated that they typically seek feedback and reflect on errors and possible solutions. Nevertheless, these behaviors tend to occur primarily among colleagues within the same profession, suggesting a need to foster interprofessional learning⁽²⁹⁾.

Regarding job performance, the results reveal a greater emphasis on technical activities, such as measuring vital signs, developing care plans, and administering medication, and less attention to the emotional and social aspects of patients and their families. Additionally, low levels of voluntary participation in meetings or improvement initiatives were reported. These findings are consistent with the literature, which indicates that heavy workloads and lack of time lead professionals to prioritize physical needs over emotional ones⁽³⁰⁾.

The findings support the Organizational Learning model⁽⁶⁾. Hypotheses one and two showed significant positive associations between psychological safety and learning behavior, as well as between learning behavior and the job performance of nursing professionals. This is consistent with studies that found significant relationships between these variables^(4,11,13).

Likewise, a significant association was found between psychological safety and job performance, which is consistent with hypothesis four, in which a relationship between these variables was established based on the available evidence^(4,32). However, this finding differs from some studies^(6,16). This association confirms that nursing professionals who exhibit higher levels of psychological safety possess a greater capacity to handle the challenges and difficulties that arise in their workplace.

When analyzing by institution type, a significant effect of psychological safety on job performance was identified only in the private institution⁽⁵⁾. Likewise, learning behavior showed a significant effect on job performance both in the overall analysis and in the public institution^(11,17). Taken together, these findings highlight the importance of fostering learning behaviors that enhance psychological safety in order to improve job performance.

Among the study limitations are the absence of randomization in participant selection, which limits the generalizability of the findings, as the results only represent the participating institutions. Additional limitations include the use of self-report instruments, which are susceptible to response bias, and the unequal distribution of sample size across institutions. Finally, it is important to note that the lack of cross-cultural adaptation of the instruments, along with the absence of semantic, idiomatic, conceptual, and cultural evaluation, posed a risk to the quality and applicability of the measurements. Nevertheless, the findings provide relevant evidence regarding variables associated with care management and the quality of healthcare services.

CONCLUSION

Psychological safety is associated with learning behavior and job performance; likewise, learning behavior is associated with job performance, a finding consistent with the variable interaction model proposed for this study.

It was identified that psychological safety influences the job performance of nursing professionals only in the private institution, whereas learning behavior showed a significant effect on job performance in both the overall analysis and the public institution. Moreover, learning behavior demonstrated a mediating effect between psychological safety and job performance in both the overall analysis and in the public institution.

The results reveal the importance of promoting positive work environments. It is essential for nursing leaders to foster environments of psychological safety through strategies based on motivation, trust, and support, as well as opportunities for learning and professional development that contribute to high-quality, safe job performance and with a positive impact on healthcare delivery.

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Data and material availability

Access to the dataset is available upon request from the corresponding author.

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Conflict of interest

The authors declare that there is no conflict of interest.

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