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Escaping voluntary confinement: A framework to address Stockholm syndrome in cardiac nursing

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Abstract

BACKGROUND: Due to high burnout and intense emotional investment in patient outcomes, nurses may inadvertently become trapped in dysfunctional interpersonal dynamics at work, resembling Stockholm syndrome. Understanding and managing this phenomenon requires field research. This study explores intervention strategies to address organizational Stockholm syndrome among nursing staff in cardiac care hospitals in Isfahan.

METHODS: This sequential exploratory mixed-methods study comprised qualitative and quantitative phases. In Phase I, 21 cardiac nursing specialists were purposively recruited and interviewed using semi-structured, in-depth interviews. Data were analyzed using Braun and Clarke's thematic analysis, and trustworthiness was ensured according to Lincoln and Guba's criteria. In Phase II, the qualitative findings informed the development of a structured survey administered to 276 staff working in cardiovascular wards in Isfahan. Participants rated eight qualitatively derived strategic domains using a 5-point Likert scale. A hierarchical model was tested in AMOS 22 to examine the higher-order organization and conceptual coherence of the proposed framework.

RESULTS: The findings support a hierarchical framework for addressing organizational Stockholm syndrome among cardiac nurses, highlighting coordinated strategies across individual, interpersonal, and organizational domains. The three higher-order dimensions were Individual Empowerment (positive affect, psychological development, and self-belief), Interpersonal Development (social capital and communication climate), and Improving Organizational Climate (social hope and morale). The quantitative findings indicated acceptable hierarchical coherence among the domains, providing preliminary structural support for the proposed framework.

CONCLUSION: The proposed tri-level framework offers a practical approach for hospital management to address organizational Stockholm syndrome by supporting empowerment initiatives, strengthening organizational voice, and enhancing transparency. Integrating these strategies may improve psychological safety, promote staff well-being, and ultimately contribute to better quality of patient care.

Keywords: Workforce; Nursing Staff; Organizational Culture; Organization and Management; Cardiovascular Nursing

Introduction

Stockholm syndrome is a psychological condition in which hostages develop positive feelings toward their captors, refuse to cooperate with authorities, recognize the captor's humanity, and fail to perceive them as a threat[1,2]. Research is limited by difficulties in obtaining large, statistically valid samples. In workplaces, organizational Stockholm syndrome occurs when employees form a psychological bond with powerful managers due to feelings of dependence and powerlessness[3-5]. This is common in hierarchical settings like public hospitals, where staff may endure mistreatment yet remain loyal because of job security, financial dependence, and fear of change[6].

Escaping this "organizational hostage-taking" is hindered by structural barriers (e.g., rigid hierarchies, lack of accountability) and psychological ones (e.g., resistance to change, pathological dependence). The syndrome can function as both an unconscious identification and a conscious coping strategy for surviving hopeless situations[7,8]. Studies in developing countries often emphasize gendered perspectives, examining women, victims of domestic violence or sex work, within contexts of masculine dominance[9,10]. Applying Stockholm syndrome to organizations offers a valuable lens for understanding workplace power dynamics, injustice, and social inequalities. Existing research highlights the need for awareness of emotional, structural, and cultural dimensions, especially in challenging contexts[11].

Chronic psychological stress has well-established effects on cardiovascular physiology and disease risk, mediated through neuroendocrine, autonomic, and inflammatory pathways[12,13]. Epidemiological evidence shows that psychosocial stressors, including work-related stress, are associated with a higher incidence of myocardial infarction, stroke, hypertension, and cardiovascular mortality, independent of traditional risk factors[14,15]. Organizational Stockholm syndrome, characterized by prolonged psychological stress and maladaptive bonds in oppressive environments, thus represents a chronic psychosocial burden that may plausibly exacerbate CVD risk through these biological stress pathways.

On the other hand, Nurses' psychological well-being significantly influences the quality and safety of patient care, particularly in high-acuity settings such as cardiac units. Burnout, emotional exhaustion, and occupational stress among nurses have been consistently associated with increased medical errors, reduced patient safety, and lower quality of care[16,17]. In complex environments such as cardiac care, where patients require continuous monitoring, rapid clinical judgment, and precise medication management, impaired psychological functioning may compromise vigilance and decision-making[18]. Evidence from large multicenter studies shows that higher nurse burnout is associated with increased patient mortality and adverse events[19]. Furthermore, poor nurse mental health has been linked to lower patient satisfaction and diminished therapeutic communication[20]. These findings underscore the importance of supporting nurses' psychological health as a critical component of improving cardiovascular patient outcomes.

Given the substantial impact of organizational Stockholm syndrome on nurses' psychological well-being, organizational functioning, and patient safety, particularly in high-risk cardiac settings, there is a pressing need to move beyond descriptive accounts toward actionable solutions. As a chronic psychosocial stressor, this phenomenon may also contribute to cardiovascular risk through sustained stress-related physiological mechanisms, further underscoring its relevance in cardiac care environments. Despite growing recognition of workplace stress in healthcare, few studies have proposed structured, context-specific frameworks to facilitate escape from such maladaptive dynamics. Therefore, this study aims to design and explain a framework to overcome organizational Stockholm syndrome among cardiac nurses, thereby enhancing engagement,

productivity, and the quality and safety of cardiovascular care.

Methods

Our research sought to determine which evidence-based strategies or intervention models can be developed to address and mitigate the effects of organizational Stockholm syndrome among nurses and staff in cardiac hospital units, given its documented prevalence and impact in high-stress medical environments. To achieve this aim, this mixed-method study was conducted in three sequential phases: a non-systematic literature review, a qualitative phase, and a quantitative phase.

Review of literature

At the initial stage, a non-systematic literature search was conducted in PubMed to identify relevant studies published between 2020 and 2025. The search used a combination of keywords, including *"Stockholm syndrome," "trauma bonding," "organizational Stockholm syndrome," "workplace abuse," "workplace violence," and "organizational culture."* The most relevant findings from this initial review guided the next phase of the study by helping refine the focus and develop the interview framework.

Table 1 summarizes key studies conducted on Stockholm syndrome.

Qualitative phase

Population and data collection

For the qualitative phase, data were collected in the field through in-depth, semi-structured interviews conducted from May to July 2025. The study population for the qualitative phase included subject-matter experts and specialists, senior officials from the Ministry of Health, university professors, and experts in management, organizational behavior, political science, human resources, and social sciences. A criterion-based purposive sampling method was employed. Participants were selected based on sufficient knowledge of Stockholm syndrome, experience with affected individuals, and familiarity with the conditions of cardiac nursing units and hospital environments. Additionally, participants were required to have more than ten years of relevant work experience.

The criterion for determining when to stop theoretical sampling was the achievement of theoretical adequacy of the categories.

Trustworthiness and Validation Strategies

To assess the rigor of the qualitative data, established validation techniques in qualitative research were applied, including credibility (reflexivity), transferability (sampling strategies), dependability (audit trails), and confirmability (peer debriefing)[27]. Peer debriefing with colleagues and subject-matter experts was used to validate interpretations and minimize personal bias by incorporating alternative perspectives, thereby enhancing objectivity and strengthening the validity of the findings[28].

Dependability was ensured through the maintenance of a detailed audit trail, in which all stages of the research process were systematically documented and data extracted from each phase were carefully recorded, supporting transparency and traceability[29]. Transferability was addressed by clearly describing the sampling process and inclusion criteria[27]. The study employed criterion-based purposive sampling with a high level of diversity and heterogeneity. Additionally, throughout the research process, efforts were made to identify and control for researchers' biases and assumptions to enhance the trustworthiness of the findings further.

M.S conducted interviews. Each interview lasted approximately 45-60 minutes and was audio-recorded and transcribed verbatim. Detailed field notes were also taken during the semi-structured interviews to capture contextual observations and non-verbal cues. The research team developed the interview guide based on a review of the relevant literature.

Qualitative analysis

Qualitative data analysis was performed using Atlas.ti 9 software. It was conducted using reflexive thematic analysis, following

Table 1. Research on Stockholm Syndrome

Title	Findings	Author(s)
Stockholm syndrome in Indian organizational culture[21]	"Corporate Stockholm Syndrome" has become an area of interest in health and labor economics due to its severe health consequences, especially in India.	Samanta & Singh (2020)
Staying and engaging in work against the odds: investigating corporate Stockholm syndrome[22]	Factors such as leader/organizational identity, career self-management, overcompetence, power distance, and tenure explain how employees are retained and engaged, and identified cases of "Corporate Stockholm Syndrome-like" behaviors.	Wechtler et al. (2020)
Does Stockholm syndrome exist in Lebanon? Results of a cross-sectional study considering the factors associated with violence against women in a Lebanese representative sample[9]	A positive association between Stockholm Syndrome and violence against women. Factors increasing this association include being divorced, low education, a partner with addiction, and a history of threats/violence.	Rahme et al. (2021)
Self-Esteem and Stockholm Syndrome in Meeting Victims of Violence[23]	There is a negative relationship between self-esteem and Stockholm Syndrome; low self-esteem increases Stockholm Syndrome behavior.	Sabila et al. (2022)
An Empirical Study of Sexual Harassment and Stockholm Syndrome in Essential and Non-Essential Workers in the COVID-19 Crisis[11]	Stockholm Syndrome and sexual harassment are strongly related. Essential workers scored higher on both Stockholm Syndrome and sexual harassment than non-essential workers.	Harley and Morganson (2023)
Stockholm syndrome and energy dependence: the interplay of national psychology and geopolitics[24]	Energy dependency fosters a "hostage mentality" at the national level, intertwined with national identity and fear. Overcoming it requires energy independence, multilateral cooperation, and cognitive restructuring of leaders.	Zhang (2025)
Corporate Stockholm Syndrome: An Explanation for Employee Commitment in Consistently Dysfunctional Library Organizations?[25]	Analyzes why library employees stay in inefficient organizations (e.g., fear of consequences, sense of duty). Explains the paradox of increased commitment to harmful work environments.	Meslener & Gourlay (2025)
The Role of Artificial Intelligence with Stockholm Syndrome in B2B Purchasing: Why Do Customers Stick with Mediocre Suppliers?[26]	AI-based customer relationship systems can unintentionally reinforce supplier dependency, leading companies to maintain relationships with suboptimal suppliers even when better alternatives are available.	Deep Smith (2025)

the methodological framework of Braun and Clarke[30]. Reflexive thematic analysis is widely used in qualitative research in palliative medicine and more broadly in health research. This approach provides systematic procedures for coding and theme development. It allows for both inductive (data-driven) and deductive (theory-guided) analyses. It also enables analysis at both semantic (explicit, surface-level) and latent (underlying, implicit) levels.

The analysis followed the six-phase iterative process proposed by Braun and Clarke, including data familiarization, generation of initial codes, development of preliminary themes, review and refinement of themes, defining and naming themes, and production of the final report. Theoretical sampling continued until the theoretical adequacy of the categories was achieved. The researcher repeatedly reviewed and compared the data to ensure that each category was sufficiently developed. After each interview, newly coded data were compared with existing codes. When the proportion of new codes became minimal, data saturation was considered reached. Saturation was achieved after 21 interviews; two additional interviews were conducted to confirm this, yielding no new information.

Analyses were initially conducted by S.S and M.S after which the results were compared

and reviewed. The coding process was further discussed and refined during two consensus meetings with all research team members. The analysis was first performed in Persian, and the final codes were subsequently translated into English through team consensus.

Quantitative phase

The second phase of this mixed-methods study employed a cross-sectional survey design conducted between October and November 2025. The purpose of this phase was to examine the structural coherence of the strategic domains identified in the qualitative phase and to explore their hierarchical relationships.

Population and sampling

The statistical population consisted of nurses and experts, including managers and administrators, working in cardiovascular wards of hospitals in Isfahan, totaling approximately 1,000 individuals. Using Cochran's sampling formula[31], a sample size of 276 participants was determined. Participants were selected using convenience sampling.

Quantitative Instrument

The quantitative instrument was developed directly from the qualitative findings. Thematic analysis identified eight strategic domains: Positive Affect, Psychological Development, Self-Belief, Development of Social Capital, Improving Communication Climate, Psychological Safety, Social Hope, and Improving Organizational Morale.

Each domain was operationalized as a single-item measure. Participants rated the extent to which each strategy could contribute to preventing Stockholm syndrome in hospital settings using a 5-point Likert scale (1 = very low extent to 5 = very high extent). The descriptive subcomponents derived from the qualitative phase were included to clarify the conceptual meaning of each domain but were not scored separately. Because each domain was represented by a single observed indicator, the instrument was not designed as a multi-item psychometric scale; rather, it functioned as a quantitative operationalization of qualitatively derived strategic constructs.

Data Analysis

Data were analyzed using AMOS software. Questionnaire validity was assessed through qualitative face validity and content validity, including the content validity ratio (CVR) and content validity index (CVI). Reliability was evaluated in a sample of 60 nurses by assessing internal consistency using Cronbach's α.

A hierarchical model was tested to examine whether the eight observed domains could be organized into three higher-order dimensions identified during the qualitative phase: Individual Empowerment, Interpersonal Development, and Improving Organizational Climate. These three dimensions were subsequently specified as components of an overarching construct labeled Strategies. Given that each domain was measured using a single indicator, model evaluation primarily relied on chi-square statistics and the relative chi-square index (χ^2/df). The analysis therefore focused on assessing the hierarchical organization and conceptual coherence of the domains rather than conducting full confirmatory measurement validation.

Ethical Considerations

The data and findings reported in this study were derived from a doctoral dissertation approved by the University Ethics Committee on April 8, 2025 (IR.IAU.KHUISF.REC.1404.006). All ethical and professional standards were strictly observed in accordance with established research ethics guidelines. Participants were fully informed about the study objectives, procedures, and their rights before participation, and written informed consent was obtained from all participants. Participation was voluntary, and participants were assured of their right to withdraw from the study at any stage without consequences. Confidentiality and anonymity were maintained throughout the research process, and all data were securely stored to ensure privacy and data protection.

Table 2. Demographic characteristics of participants

Row	Gender	Work Experience (Years)	Position/Title	Field of Study & Degree
1	Female	25	Administrative/Quality Improvement Officer	Master of Nursing - Community Health
2	Male	20	Administrative/Office Manager	Bachelor of Business Administration
3	Male	23	Administrative/Center Manager	Master of Financial Management - Budgeting
4	Female	26	Administrative/Deputy Director of Research Institute	Ph.D. in Nutrition
5	Female	18	Clinical/Head Nurse of the Department	Bachelor of Nursing
6	Female	20	Administrative/Educational Supervisor	Master of Nursing - Pediatric Specialty
7	Female	19	Clinical/Emergency Department Head Nurse	Bachelor of Nursing
8	Female	23	Clinical/Surgical Head Nurse	Bachelor of Nursing
9	Female	29	Clinical/Delivery Room Supervisor	Master of Midwifery / Master of Medical Education
10	Male	27	Administrative/University Professor	General Physician / Ph.D. in Health Services Management
11	Male	30	Administrative/University Professor	Ph.D. in Health Services Management
12	Female	10	Administrative/University Professor	Ph.D. in Health Economics
13	Male	18	Administrative/Center Manager	Master of Health Services Management
14	Male	12	Administrative/Center Manager	Master of Public Administration
15	Female	18	Clinical/Delivery Room Supervisor	Bachelor of Midwifery
16	Female	24	Administrative/Educational Supervisor	Master of Nursing
17	Female	17	Administrative/Assistant Educational Supervisor	Bachelor of Nursing
18	Female	4	Clinical/Pharmacist	Ph.D. in Pharmacy
19	Female	23	Clinical/Patient Safety	Bachelor of Nursing
20	Female	27	Clinical/Head Nurse	Master of Nursing
21	Female	25	Clinical/Clinical Supervisor	Master of Nursing
22	Female	30	Clinical/Head Nurse	Bachelor of Nursing
23	Male	22	Clinical/Nursing Services Manager	Master of Nursing

Results

Qualitative phase results

The demographic characteristics of the participants are presented in Table 2. In the qualitative phase, approximately 70% of participants were female, and 30% were male. The average work experience of the participants was 21.3 years.

The results of the qualitative phase aimed to address the research question on the exit strategies used by nurses and staff to overcome organizational Stockholm syndrome. Table 3 presents the identified strategies for managing and mitigating the effects of Stockholm syndrome.

The qualitative analysis revealed that strategies for exiting organizational Stockholm syndrome, as derived from the paradigmatic model, comprised 48 codes. These codes were grouped into three overarching strategic elements: individual empowerment, interpersonal development, and improvement of the organizational environment. Each element is linked to the central phenomenon of exiting the syndrome, serving as a necessary condition for effective strategic action.

Participants emphasized that interventions at the individual, interpersonal, and organizational levels are critical. One participant (P5) noted: *"When people see their sense of security in submission to authority, they become dependent on it; if this dependence is reduced and people do not experience feelings of fear and insecurity, we can expect them to overcome this syndrome."* Another participant (P8) added: *"If the human resource management development system in*

Table 3. Strategies to Counteract Organizational Stockholm Syndrome in Cardiac Hospital Settings

Main themes	Themes	Subthemes	Codes
Strategies	Individual Empowerment	Positive Affect	Emotional Dynamism
			Strengthening a Sense of Hope
			Increasing Hope
			Affectionate Gestures
			Protecting Emotional Stability
			Strengthening the Feeling of Security
		Psychological Development	Personal Values
			Sense of Spirituality
			Spiritual Self-Actualization
			Self-Esteem and Social Skills
			High Self-Confidence
			Voluntary Expression of Ideas
			Ability to Convey Opinions to Management for the Benefit of the Organization
			Sharing New Ideas
			Shared Identity
			Responsibility
		Self-Belief	Improving Communication Skills
			Overcoming Emotions and Feelings
			Participation in Decision-Making
			Acceptance of One's Own Abilities
			Recognition of Psychological Capacities
			Understanding Communication Capabilities
	Interpersonal Development	Development of Social Capital	Strengthening Social Trust
			Strengthening Convergent Perspectives
			Encouraging Organizational Voice(s)
			Reproduction of Social Capital
		Improving Communication Climate	Strengthening Interaction Based on Trust
			Increasing Tolerance Towards Individual and Group Differences
			Strengthening Communication Styles
			Strengthening Cultural Dialogue
			Creating Space for Debate and Discussion
			Encouraging Organizational Voice(s)
			Structural Empowerment
		Psychological Safety	Increasing the Level of Employee Interaction
			Psychological Safety to Speak Up
			Maintaining Mutual Relationships
			Coping with Psychological Trauma
			Communication Security
		Social Hope	Promoting Administrative Health
			Utilizing the Benefits of Legal Authority
			Improving Organizational Relationships
			Depicting a Desirable Future for the Organization's Voice
	Improving Organizational Climate	Improving Organizational Morale	Transparency in Decision-Making Based on Voice
			Increasing Trust in Voice Holders
			Collaborative and Participative Atmosphere
			Increasing Transparency in Performance and Power
			Controlling Fear and Anxiety
			Increasing Mutual Respect

hospitals supports individual independence and enhances employees' ability to recognize and develop their skills, it will increase their energy and enable them to resist harmful emotional dependencies."

The results presents a multi-level framework for exiting organizational Stockholm syndrome in cardiac nursing, emphasizing that interventions must be concurrent and systemic across three interdependent dimensions to prevent co-optation by the pathogenic system.

The first dimension, individual empowerment, serves as the foundation. It seeks to rebuild the "agentic self" by fostering internal resources, including positive affect (e.g., hope, stability), psychological development (e.g., self-esteem, sense of voice), and self-belief (e.g., recognizing personal capacity, participating in decision-making). A key leverage point is the transition from internal coping to the voluntary expression of ideas, marking the emergence of external agency.

The second dimension, interpersonal development, focuses on transforming the workplace's social fabric. It emphasizes building social capital (e.g., trust, shared perspectives), enhancing the communication climate (e.g., dialogue, tolerance), and establishing psychological safety to enable open expression and collective coping. Actions such as encouraging organizational voice and creating space for debate serve as direct countermeasures to cultures of silence and fear.

The third dimension, improving the

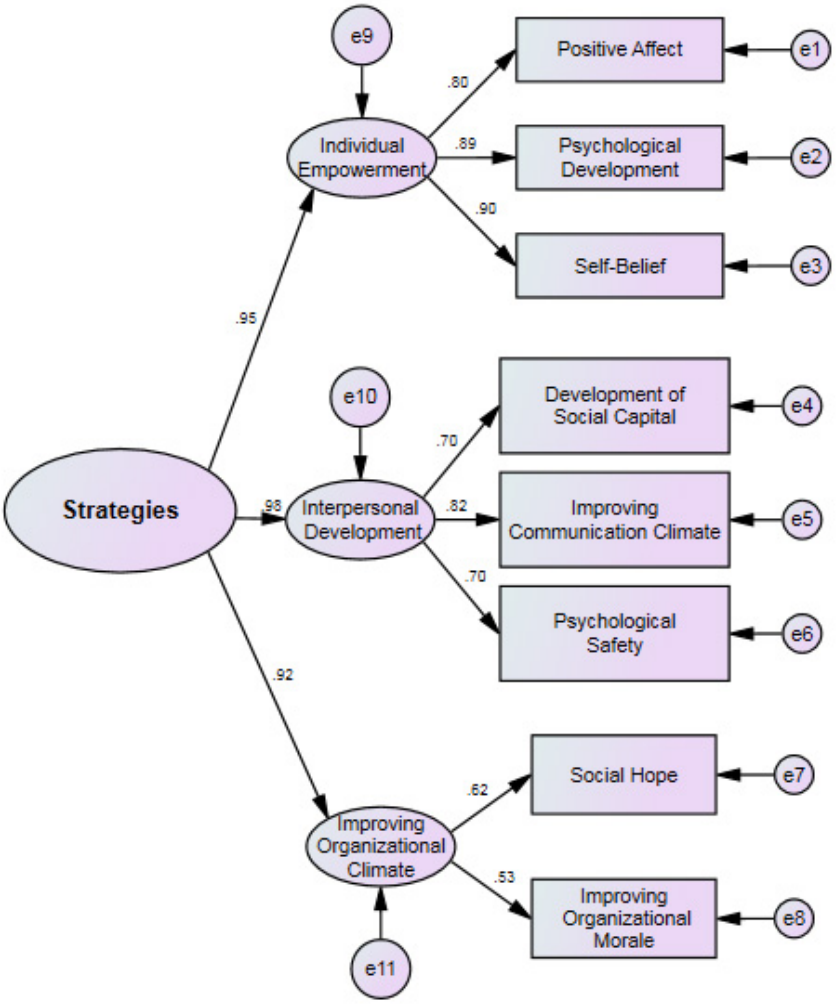

Figure 1. Hierarchical l model of strategies and related domains for preventing Stockholm syndrome in hospital settings.

Table 4. Chi-square statistics for the hierarchical model

Index	Df	Chi-Square	Relative Chi-Square	Sig
Value	20	57.853	2.9	< 0.001

organizational climate, addresses systemic and structural factors. It fosters social hope by promoting administrative health. It enhances organizational morale through transparent decision-making, increasing trust in leadership, and cultivating a collaborative environment that mitigates fear and reinforces mutual respect. Strategies such as transparency in decision-making and openness in performance and power distribution confront opaque hierarchies, shifting the organization toward a participatory structure that institutionalizes voice.

Quantitative phase results

Based on the results, the overall CVR and CVI of the questionnaire were 0.76 and 0.90, respectively. The internal consistency of the questionnaire, assessed using Cronbach's α, was 0.88.

Hierarchical Model

A hierarchical model was tested using AMOS to examine the higher-order organization of the eight single-item domain ratings. As shown in Figure 1, the eight observed strategic domains were grouped into three higher-level dimensions: Individual Empowerment, Interpersonal Development, and Improving Organizational Climate. These three dimensions were subsequently specified as components of an overarching construct labeled Strategies. The hierarchical structure supports the conceptual coherence of the framework derived from the qualitative phase.

All standardized path coefficients exceeded 0.30, indicating meaningful relationships between the observed domains and their corresponding higher-level dimensions. The standardized loadings of the three higher-level dimensions onto the Strategies construct were also substantial, suggesting acceptable structural alignment among the domains.

Model evaluation based on chi-square statistics indicated acceptable fit (χ^2 = 57.853, df = 20, χ^2/df = 2.90, $p < 0.001$). Although the chi-square statistic was statistically significant, this is expected due to its sensitivity to sample size. The relative chi-square value fell within commonly accepted thresholds, indicating reasonable correspondence between the specified hierarchical structure and the observed data.

Because each strategic domain was measured using a single-item rating and model evaluation primarily relied on chi-square indices, the findings should be interpreted as preliminary evidence of hierarchical coherence rather than definitive confirmatory validation.

Discussion

This study proposed a hierarchical framework for addressing organizational Stockholm syndrome among cardiac nurses, emphasizing coordinated strategies at the individual, interpersonal, and organizational levels. The qualitative phase identified individual empowerment, interpersonal development, and organizational improvement as core domains. The quantitative phase examined the structural coherence of this framework and provided preliminary support for the hierarchical organization of these domains. The findings suggest that the proposed model offers a conceptually aligned structure for understanding coordinated interventions across levels.

Research explicitly examining organizational Stockholm syndrome remains limited. To the best of our knowledge, no prior studies have focused on cardiac nursing. Nevertheless, a growing body of qualitative evidence on healthcare worker distress, trauma exposure, leadership practices, and organizational support provides strong contextual support for our findings.

At the organizational level, our results align closely with qualitative evidence on trauma-informed leadership in healthcare. Harris et al. (2024), through semi-structured interviews with healthcare leaders during the COVID-19 pandemic, demonstrated that leadership behaviors promoting safety, trustworthiness, transparency, peer support, collaboration, and empowerment were central to mitigating staff distress. Strategies such as open communication channels, regular information sharing, wellness check-ins, and flexible opportunities for staff voice closely align with our theme of improving the organizational climate and fostering psychologically safe environments. Importantly, Harris et al. also identified missed opportunities, including insufficient space for emotional processing, inadequate support for middle managers, and limited attention to cultural and gender considerations. These gaps reinforce our argument that fragmented or incomplete organizational responses may unintentionally perpetuate distress and dysfunctional attachment patterns. While trauma-informed leadership frameworks emphasize structural and relational strategies, our model extends this perspective by explicitly integrating individual empowerment processes, suggesting that sustainable recovery from organizational trauma requires simultaneous strengthening of personal agency, relational trust, and systemic climate[32].

At the interpersonal level, our findings resonate with trauma-informed approaches to workplace relationships. Greer (2024) identified safety, trustworthiness, choice, collaboration, and especially empowerment as foundational principles of trauma-informed workplaces. Participants emphasized recognition as individuals, having their voices heard, and experiencing respectful and supportive interactions, concepts that closely align with our themes of interpersonal development and relational empowerment. These findings reinforce our argument that breaking dysfunctional attachment patterns requires not only structural change but also relational environments that foster mutual respect, psychological safety, and shared agency[33].

Interpersonal and organizational shortcomings are particularly evident in contexts of workplace violence and chronic exposure to stress. Zhang et al. (2021), in a qualitative systematic review across eight countries, reported that nurses experience enduring psychological trauma following workplace violence, while formal and informal support systems are frequently inadequate. Their findings align with our emphasis on individual empowerment and interpersonal development, highlighting the importance of peer support, psychological resources, and safe communication climates. Zhang et al. underscored that organizational recognition and proactive support are essential for recovery, reinforcing our position that empowerment and systemic interventions must operate concurrently to prevent nurses from forming traumatic bonds with high-stress or dysfunctional work environments[34].

Further evidence of the need for integrated responses emerges from studies of nurses facing complex and chronic workplace challenges. Cranage and Foster (2022) documented experiences of violence, bullying, understaffing, moral distress, and inadequate organizational support among mental health nurses. These multifaceted stressors mirror the conditions under which dysfunctional organizational attachments may develop. Their findings emphasize that while individual and interpersonal empowerment are essential coping mechanisms, targeted organizational strategies, such as supportive policies, skill development, and staff well-being initiatives, are necessary to sustain engagement and psychological safety[35]. This supports our argument that interventions must operate across all levels of the organizational system to effectively disrupt harmful attachment dynamics.

Evidence from studies on organizational support for nurses' mental health further strengthens this multi-level perspective. Ali and Shaban (2025) highlighted the critical role of empathetic leadership, adequate staffing,

accessible mental health resources, and stigma-free wellness cultures in facilitating recovery from burnout and emotional exhaustion. These findings align directly with our three core domains, underscoring that without coordinated strategies addressing personal agency, relational trust, and systemic support, nurses remain vulnerable to psychological harm. Their work reinforces our conclusion that multi-level empowerment is central to overcoming organizational Stockholm syndrome[1].

Support for this framework is also evident in cardiovascular care settings. Jelen et al. (2024) identified key drivers of workplace distress among cardiovascular nurses and allied health professionals, including inadequate interprofessional support, unsustainable workloads, and limited leadership transparency. Through co-design workshops, participants developed interventions such as mentorship programs, structured safety huddles, and communication platforms[36]. These worker-informed strategies closely parallel our emphasis on interpersonal development and organizational improvement, highlighting that sustainable mitigation of workplace distress requires collaborative, system-level approaches that integrate individual, relational, and organizational dimensions.

Finally, our emphasis on individual empowerment is supported by evidence on leadership dynamics and nurse resilience. Tawfik et al. (2025) demonstrated that toxic leadership significantly undermines nurses' quality of work life. Yet, nurses with higher agility, characterized by adaptability and resilience, were better able to buffer these effects.[37] This finding aligns with our focus on psychological development, suggesting that strengthening internal resources such as self-efficacy, positive affect, and adaptive coping is essential for mitigating the impact of dysfunctional organizational environments. Importantly, this study also highlights the interaction between leadership behavior and individual capacity, reinforcing our argument that overcoming organizational Stockholm syndrome requires concurrent strategies that enhance systemic conditions, relational safety, and individual resilience.

Limitation and strength

This study has several limitations. First, the qualitative design and purposive sampling of cardiac nurses in Isfahan limit the generalizability of the proposed framework to broader populations. Although this approach provided in-depth contextual insights, future studies should examine the framework quantitatively across diverse cultural, organizational, and professional settings to assess its broader applicability.

Second, in the quantitative phase, each strategic domain was measured using a single composite rating. While this approach was appropriate for examining the structural organization of the qualitatively derived domains, it limits the depth of measurement assessment and the ability to evaluate each construct using multiple indicators. Future research may develop multi-item scales for each domain to allow more comprehensive measurement and replication of the proposed framework.

Despite these limitations, the study has notable strengths. It provides one of the first empirically grounded frameworks addressing organizational Stockholm syndrome in cardiac nursing. The integration of qualitative exploration with quantitative structural examination enhances the credibility and depth of the findings. By combining thematic insight with hierarchical modeling, the study offers a comprehensive understanding of the individual, interpersonal, and organizational processes involved in addressing this phenomenon.

Conclusion

The findings of this study highlight the importance of formally operationalizing the proposed tri-level framework and integrating it into hospital management systems. Human resource departments in cardiac care settings should develop and implement targeted interventions addressing each dimension of the model. These may include structured empowerment programs

to enhance psychological development and self-belief, regular, anonymous forums to strengthen organizational voice and improve the communication climate, and revised performance evaluation systems that incorporate indicators of transparency and participative decision-making. Furthermore, incorporating assessments of administrative health, psychological safety, and staff engagement into hospital accreditation processes may incentivize necessary structural reforms, helping to prevent the development of organizational Stockholm syndrome while promoting staff well-being and improving the quality of patient care. However, given the context-specific nature of the sample and the perception-based measurement approach, these recommendations should be adapted and evaluated across different organizational and cultural settings before broad implementation.

Conflict of interests

The authors declare no conflict of interest.

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Author's Contributions

Study Conception or Design: MS
Data Acquisition: MS, SS
Data Analysis or Interpretation: MS, AE, SS
Manuscript Drafting: MS
Critical Manuscript Revision: AE, SS

All authors have approved the final manuscript and are responsible for all aspects of the work.

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