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The Association Between Professional Burnout and Empathetic Exhaustion Among Emergency Department Nurses: An Intervention Approach Based on the Embeddedness Theory

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Abstract

Background: Emergency department nurses, operating within a demanding environment, face significant psychological risks, including professional burnout and empathy exhaustion, which often co-occur and exacerbate each other. Current interventions overwhelmingly target individual nurses, such as through resilience training, while neglecting systematic, organizational-level solutions.

Objective: This study proposes an organizational intervention framework grounded in Work Embeddedness Theory. By integrating principles from Conservation of Resources Theory and Empathy Cost Theory, it aims to develop a practical pathway for nursing managers to address the dual crises of burnout and empathy depletion at their systemic roots.

Method: Employing a theory-driven design, we constructed a core intervention logic: enhancing organizational embeddedness (via connection, matching, and sacrifice) → supplementing psychological resources → improving mental health outcomes. Empathy Cost Theory was specifically incorporated to fortify interventions within the "connection" dimension. Concrete modules, steps, and mechanisms were delineated for each dimension, forming a structured organizational pathway.

Results: We developed an integrated intervention pathway featuring three modules and six specific measures: (1) Strengthening Connection (structured buddy systems; post-traumatic debriefings) to build support networks; (2) Optimizing Match (dynamic skill-task alignment; values clarification workshops) to enhance control and meaning; (3) Increasing Sacrifice (tiered honor/benefit systems; visualizing exit costs) to foster commitment. Each measure's implementation protocol and theoretical rationale are specified.

Conclusion: This study provides a theoretically grounded, actionable organizational intervention pathway. It shifts the management paradigm from repairing individuals to designing supportive systems, offering a blueprint for creating work environments that intrinsically protect and replenish nurses' psychological resources.

Keywords

burnout; empathy fatigue; job embeddedness; emergency department; organizational intervention; nursing

1. Introduction

The emergency department serves as the hospital's frontline, typically characterised by a high volume of critically ill patients, complex and rapidly evolving conditions, and an environment marked by high risk and intense workload [1]. Consequently, within this demanding and high-pressure setting, emergency nurses are prone to experiencing prolonged anxiety and physical and mental exhaustion. Over time, this frequently leads to widespread occupational burnout, primarily manifesting as emotional exhaustion, depersonalisation, and diminished personal accomplishment [2]. Concurrently, emergency nurses are particularly susceptible to professional psychological risks, specifically empathy exhaustion – a condition arising from sustained, profound empathy with patients' suffering, leading to vicarious trauma and emotional numbness [3]. Sun Binghai et al. (2011) summarised the mechanism of empathic exhaustion: after interacting with traumatised individuals, helping professionals gradually develop empathetic responses based on the victims' experiences. However, excessive empathy that remains unresolved and unprocessed forms residual emotional capacity which accumulates over time, eventually transforming into empathic strain. This pressure then persistently impacts the mental health of the helping professional, and the resulting negative interactions readily lead to the development of empathic exhaustion in the helper [3]. It is also noteworthy that these two psychological crises do not exist in isolation; they frequently interact and influence each other, forming a vicious cycle where 'emotional exhaustion diminishes empathic capacity, while empathic trauma further erodes work meaning' [4]. As Jenkins and Baird (2002) observed in their research, the parallels between empathic exhaustion and occupational burnout primarily lie in the fact that both primarily affect helping professionals. Both conditions lead to psychological distress among these individuals, arising from prolonged exposure to traumatic events or stressors that trigger empathic exhaustion or occupational burnout [5]. Consequently, this can severely compromise nurses' physical and mental wellbeing, leading to diminished care quality, heightened risks of medical errors, and increased staff turnover. However, current healthcare institutions predominantly focus psychological interventions at the individual nurse level, such as familiar approaches like mindfulness training and resilience building. Yet such approaches exhibit inherent limitations. For instance, the emergency department environment inherently subjects nurses to sustained high-pressure conditions. Consequently, these interventions often inadvertently focus solely on individual adaptation while overlooking the root causes of stress [6]. Thus, there remains an

urgent need for an intervention strategy originating at the organisational management level.

Work embeddedness theory offers compelling support for such an intervention framework. Reflecting on Mitchell's definition of work embeddedness, it is described as 'a relational network representing the closeness of connections between an individual and all work-related contexts within and outside the organisation, including ties to friends, affiliated groups, communities, and living environments.' This theory further indicates that the 'embeddedness' relationship between employees and organisations is primarily constituted by three dimensions: linkage (social networks), fit (person-role compatibility), and sacrifice (costs of leaving) [7]. Consequently, a highly embedded work environment enhances talent retention while better generating, replenishing, and safeguarding employees' psychological resources. Thus, this study's primary objective is to develop an intervention pathway for enhancing work embeddedness among emergency department nurses, grounded in work embeddedness theory and integrating relevant psychological frameworks such as resource conservation theory and empathy cost theory. This pathway aims to mitigate occupational burnout and empathy depletion, offering a directly implementable solution.

2. Theoretical Framework and Research Hypotheses

2.1. Theoretical Framework

This study is grounded in the theory of work embeddedness, whose three core dimensions form the three levers of our intervention:

Connections primarily refer to an individual's social networks within and outside the organisation. Stronger connections imply easier and more timely access to social support. The fit dimension primarily concerns the alignment between an individual's skills, knowledge, and personal values with their job role and organisational culture. The sacrifice dimension, meanwhile, refers to the material and psychological benefits an individual stands to lose by leaving the organisation. Greater sacrifice typically implies higher exit costs, thereby strengthening retention intentions and organisational commitment. Subsequently, integrating the Resource Conservation Theory with the Cost of Empathy Theory: Resource Conservation Theory posits that individuals strive to acquire, retain, and protect their valuable resources (such as social support and cognitive abilities). When resources are continuously depleted without timely replenishment, individuals experience burnout and corresponding stress [8]. The Cost of Empathy Theory explains the characteristics of empathic exhaustion. For instance, deeply empathising with another's suffering depletes substantial cognitive and emotional resources. When this depletion exceeds an individual's capacity for recovery, it leads to diminished or failed empathic functioning [9]. The intervention pathway's connection module is primarily designed to address this by providing timely resource replenishment.

Thus, the core intervention logic of this study is: through proactive organisational management measures, systematically reinforce nurses' 'connection', "matching", and 'sacrifice' in their work. This replenishes the critical psychological resources depleted by their duties, ultimately achieving the prevention and alleviation of occupational burnout and empathic exhaustion.

2.2. Research Hypotheses

Based on the aforementioned theories, this study constructs the following intervention logic framework (Figure 1):

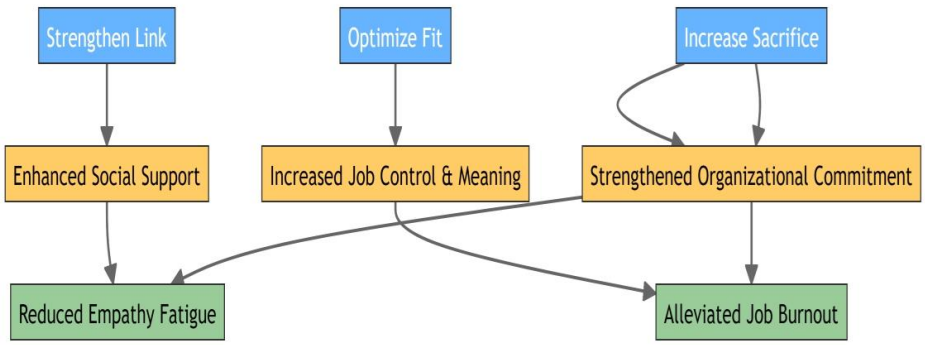

Figure 1. Intervention Logic Framework Based on Job Embedding Theory

Therefore, based on the aforementioned theory and framework, three core hypotheses for this intervention pathway are proposed:

H1: Implementing enhanced measures in the 'connection dimension' will bolster nurses' social support levels, particularly emotional support, thereby mitigating empathic exhaustion.

H2: Optimising measures within the 'Matching Domain' will enhance nurses' role clarity, sense of value, and locus of control, thereby alleviating and mitigating occupational burnout.

H3: Implementing gain-enhancing interventions in the 'sacrifice dimension' will strengthen nurses' organisational commitment and encourage the adoption of more constructive coping strategies, thereby providing synergistic protection against both occupational burnout and empathic exhaustion.

Consequently, all designs within this study's intervention pathway operationalise and translate these three hypotheses into practice.

3. Specific Intervention Pathway

This study's pathway comprises three major intervention components encompassing six core measures. Each component focuses on one dimension of work embeddedness, with measures operating synergistically to collectively form a comprehensive organisational support ecosystem (see Table 1).

Table 1. Overview of the Emergency Department Nurse Mental Health Intervention Pathway

Based on Work Embeddedness Theory

Intervention Component	Corresponding Dimension	Core Measures	Primary Objectives	Anticipated Mechanism of Action
Part One: Establishing Support Networks	Connections	Fixed Partner System Brief Debriefing for Traumatic Incidents	Developing a timely and reliable system for emotional and practical support	Providing emergency department nurses with emotional support, task sharing, and replenishment of emotional resources
Part Two: Empowering Role Competency	Matching	Task-Skill Matching Authorisation Clarity of Organisational-Individual Values	Enhancing role clarity, value recognition and work autonomy for emergency department nurses	Reducing role strain, boosting intrinsic motivation and efficacy, and lowering emotional exhaustion
Part Three	Sacrifice	Establishing an Honour and Benefits System Explicit Communication of Departure Costs	Increasing the perceived cost of departure to strengthen organisational identification	Enhanced organisational commitment, thereby promoting resource retention

Part One: Strengthening the "Connection" Dimension Through Support Network Weaving

This section primarily aims to fortify relationships among colleagues, manifesting institutionally safeguarded and predictable support structures. The first measure involves establishing a fixed-partner system. The Head Nurse leads the formation and fine-tuning of pairs, with the Nursing Department providing support through scheduling policies and systems. Considering personality compatibility and complementary skills, the Head Nurse pairs emergency department nurses into fixed partnerships. Each partner serves as the other's 'primary point of contact,' providing mutual support during shifts and acting as a buffer for low emotional states. Additionally, when scheduling shifts for the emergency department, priority is given to placing fixed partners on the same roster. This measure directly fosters robust 'connection.' Fixed partnerships provide immediate emotional support—such as sharing emotional burdens—and practical support—such as dividing workload—functioning like a portable power bank that rapidly replenishes emotional resources. This prevents acute stress from solidifying into chronic empathy fatigue (Supporting Hypothesis 1) [10].

The second measure involves brief trauma debriefings. Following traumatic incidents—such as patient agitation, medical conflicts, or violent attacks on staff—an immediate debriefing process is initiated. Within one hour of the incident's conclusion, the emergency department head nurse or a senior nurse facilitates a concise debriefing, typically lasting 10–15 minutes. This follows a

structured approach: stating facts, setting aside personal feelings, and offering support. This debriefing is not intended for public discussion but serves as internal psychological support. This measure primarily institutionalises the activation of the 'connection' network. It creates a psychologically safe space where individual trauma is collectively shared and addressed by the team, preventing individuals from facing trauma alone. This effectively reduces feelings of isolation and shame, serving as a crucial method to prevent secondary trauma (Supporting Hypothesis 1) [11].

Part Two: Empowering Job Competence Through Optimisation of the "Matching" Dimension

This section primarily aims to enable emergency department nurses to leverage their individual capabilities more extensively and effectively, ensuring recognition of their professional value while fostering greater control and a sense of purpose within their roles. The associated interventions are predominantly led by the Head Nurse of the Emergency Department. Firstly, establishing individual skill profiles for each nurse, highlighting personal strengths (such as communicating with special needs patients, caring for critically ill children, or performing complex venous access procedures). This enables the Head Nurse to purposefully assign tasks to nurses with the appropriate expertise. Such assignments are communicated publicly, and the Head Nurse regularly conducts satisfaction surveys regarding task-role fit to facilitate ongoing optimisation. This approach significantly enhances the alignment between staff and their roles. When individuals work within their areas of expertise, they experience greater control over their tasks and heightened self-efficacy. This reduces work-related anxiety and stress, helping to counteract emotional exhaustion and depersonalisation (supporting Hypothesis 2) [12].

The fourth measure centres on establishing an "Initial Commitment Refuelling Station" grounded in individual-organisational values. Organised by the Nursing Department/ward, it may involve guidance from the hospital's Humanistic Education Department or external experts where feasible. Conducted at the ward level for each new nurse intake, sessions led by external facilitators or trained ward managers cover organisational mission, personal commitment, and value alignment, culminating in the display of consensus-based work value declarations. This measure deepens 'value alignment'. By strengthening the connection between personal values and the organisational mission (saving lives and alleviating suffering), it significantly enhances perceived meaning and intrinsic motivation in work, increases stress resilience, and reduces tendencies towards depersonalisation (supporting Hypothesis 2) [13].

Part Three: Enhancing the "Sacrifice" Dimension to Deepen Organisational Belonging

This section primarily aims to enable emergency department nurses to recognise the cumulative advantages of their unit's organisational work and their own

indispensable value. This fosters greater retention and encourages active engagement in their duties. The honours system is primarily designed by the Nursing Department, with departments responsible for submitting documentation and conducting evaluations. Key interventions include establishing a tiered honours system based on years of service and professional achievements (such as quality improvements, clinical innovations, or specific patient commendations). Different tiers correspond to varying reward standards, such as bonuses or scheduling priority, alongside formal public recognition. This measure enhances emergency nurses' perception of their sacrifices. This enables them to tangibly perceive the cumulative benefits and substantial, long-term rewards derived from sustained commitment and tenure. It increases the perceived costs of leaving, thereby elevating both affective and normative organisational commitment and strengthening emergency department nurses' sense of ownership (supporting Hypothesis 3) [14].

The sixth intervention primarily involves explicit communication regarding the costs of leaving. Responsibility primarily rests with the Nursing Department, with ward managers executing the initiative. The approach involves establishing onboarding discussions during new nurse induction training and annual career development reviews. These sessions collaborate with nurses to systematically identify relevant organisational capital, such as professional capital and honour capital. Ward managers may deliberately emphasise the potential for continued growth in these capital areas and outline corresponding measures. This intervention also targets perceptions within the ‘sacrifice’ dimension. By assisting nurses in making these implicit benefits explicit and more transparent, fostering greater awareness, this approach deepens nurses' recognition of the costs of leaving. It serves to consolidate organisational commitment while incentivising sustained resource investment rather than immediate withdrawal upon encountering difficulties. This cultivates a positive psychological resource cycle (supporting Hypothesis 3) [15].

4. Implementation and Evaluation of the Pathway

Phase One: Preparation and Pilot Stage (Months 1–3): This involves establishing a dedicated task force and conducting comprehensive staff mobilisation and awareness-raising sessions. During this period, the first two measures are selected for piloting within a defined timeframe.

Phase Two: Rollout and Deepening (Months 4–12): This phase focuses on expanding and consolidating the initiative. Pilot outcomes are evaluated and optimised as appropriate, while all measures are progressively implemented in a phased, modular approach. The emphasis is on training frontline managers, such as ward nurses, first. Phase Three: System Integration and Normalisation (from month 13 onwards): Measures that have proven effective can be incorporated into

departmental management systems. A long-term feedback mechanism and continuous improvement process are then established. Subsequently, best practices can be distilled and rolled out to other high-pressure departments, such as the ICU and operating theatres (see Figure 2).

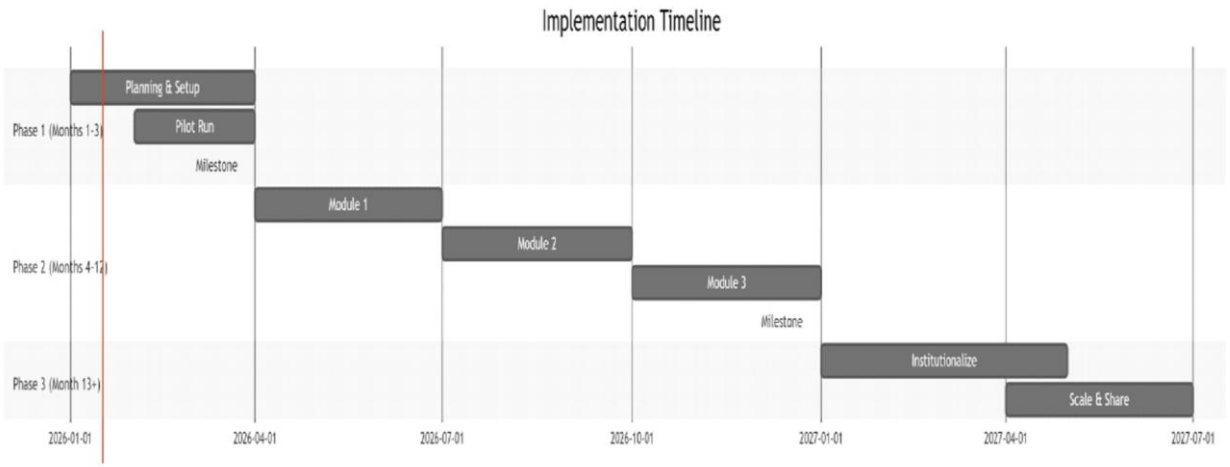

Figure 2. Implementation Roadmap for the Pathway

Regarding outcome evaluation, for formative assessment, one may periodically track the attendance rate of brief debriefing sessions and examine metrics such as nursing staff awareness and satisfaction levels. Data collection can be conducted through questionnaires, interviews, and similar methods. Concurrently, ensure pre- and post-intervention assessments using validated scales such as the Maslach Burnout Inventory (MBI) and the Empathetic Fatigue Short Form (CF subscale from PROQOL). Monitor shifts in variables including perceived social support, job control, and organisational commitment. Regarding organisational behavioural metrics, track trends in unplanned nurse turnover rates, patient satisfaction levels, and adverse event reporting rates.

5. Discussion

5.1. Innovation and Advantages of This Intervention Approach

Overall, the innovative aspect of this study's intervention pathway lies in its use of the Job Embedding Theory as an overarching framework, divided into three interconnected sections that collectively enhance each other's effectiveness. It also accurately categorises occupational burnout and empathic exhaustion, distinguishing their underlying mechanisms to enable precise, tiered interventions. Furthermore, in terms of practical implementation, the measures are highly replicable, quick to implement, low-cost, and require minimal investment. The clear steps facilitate relatively straightforward adoption and implementation at the organisational level. Furthermore, whereas previous interventions predominantly

targeted individual nurses, this study adopts a systemic, organisational-level approach originating from management itself – a top-down intervention. Consequently, it offers valuable insights for nursing managers, guiding a shift in their decision-making mindset. This facilitates their evolution from supervisory roles focused on management for its own sake towards becoming team builders and guardians of nurses' psychological wellbeing.

5.2. Limitations and Future Research Directions

This study remains primarily at the level of theory-driven programme development without empirical validation. Future research could build upon this foundation to conduct trials and assess the feasibility of the proposed interventions. Additionally, complementary management tools could be developed to enhance the precision and scientific rigour of interventions, such as creating peer support applications.

6. Conclusion

This study addresses the issues of occupational burnout and empathic exhaustion among emergency department nurses by designing a systematic intervention pathway developed based on the theory of work embeddedness. Primarily centred on three key components—strengthening connections, optimising alignment, and enhancing sacrifice—it aims to establish measures for replenishing the psychological resources of emergency department nurses from an organisational perspective. This pathway awaits practical testing and validation by researchers. Should it demonstrate significant efficacy, healthcare administrators may be advised to adopt this systematic approach, thereby jointly fostering a workplace environment that not only saves lives but also nurtures the mental wellbeing of emergency department nursing staff.

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