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Efficacy of progressive muscle relaxation intervention in mitigating compassion fatigue symptoms among nursing supervisors in hospital settings

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ABSTRACT

Background: Healthcare professionals, particularly nursing supervisors, face significant occupational wellness challenges related to compassion fatigue - a condition arising from prolonged exposure to patient suffering and administrative stressors. This investigation examined the therapeutic benefits of progressive muscle relaxation techniques in addressing compassion fatigue among nursing supervisors within hospital environments.

Methods: A quasi-experimental study design incorporating pre-post assessment with control comparison was implemented. Thirty nursing supervisors from a general hospital participated through purposive selection, randomly allocated to treatment (n=15) and comparison groups (n=15). The treatment cohort received eight structured progressive muscle relaxation sessions across four weeks. Compassion fatigue assessment utilized the professional quality of life scale (ProQOL) version 5. Statistical evaluation employed paired and independent t-test analyses.

Results: Treatment group participants demonstrated substantial compassion fatigue score reductions from 28.7±4.2 to 19.5±3.9 ($p<0.001$), whereas comparison group scores remained unchanged ($p=0.082$). Post-treatment between-group analysis revealed significant differences ($p<0.001$). Physical manifestation improvements included notable reductions in muscular tension and fatigue symptoms.

Conclusion: Progressive muscle relaxation intervention effectively diminished compassion fatigue levels and associated somatic symptoms among nursing supervisors. This approach represents a practical, evidence-based, non-pharmacological strategy for addressing occupational health challenges in healthcare settings.

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INTRODUCTION

Nursing supervisors occupy pivotal positions within healthcare systems, serving as vital connectors between administrative leadership and frontline staff while maintaining responsibility for care quality standards.[1,2] These roles demand sophisticated clinical expertise, leadership capabilities, and substantial empathetic engagement with both patients and personnel.[3] The convergence of prolonged exposure to human suffering and demanding administrative responsibilities frequently results in compassion fatigue development.[4]

Compassion fatigue manifests as comprehensive exhaustion across physical, emotional, and spiritual dimensions, stemming from sustained empathetic engagement with suffering individuals. Figley's conceptualization describes this phenomenon as the "price of compassionate care," potentially leading to diminished empathetic capacity, reduced occupational satisfaction, and professional burnout when unaddressed.[5] Indonesian healthcare settings report compassion fatigue prevalence rates of 30-45% among healthcare workers, with nursing supervisors experiencing elevated rates compared to staff-level colleagues.[6]

Global research indicates compassion fatigue significantly impacts healthcare organizations through compromised service quality, impaired decision-making processes, deteriorating workplace relationships, and increased personnel turnover.[7,8] Physical symptoms typically encompass sleep disturbances, cephalgia, muscular tension, and chronic exhaustion.[9] Effective compassion fatigue management requires comprehensive interventional approaches addressing both psychological and physiological components.[10]

Progressive muscle relaxation represents a somatic intervention strategy that reduces muscular tension through systematic contraction and subsequent relaxation of specific muscle groups. Edmund Jacobson's foundational work

established this technique based on the principle that anxiety and stress manifest as muscular tension, and that tension relief promotes improved emotional and psychological states.[11] Multiple studies have validated this intervention's effectiveness across diverse populations for stress reduction, though limited research has specifically examined its application for compassion fatigue among nursing supervisors.[12,13]

Contemporary healthcare challenges necessitate evidence-based interventions that enhance worker wellbeing. Recent systematic analyses emphasize the need for practical, implementable interventions suitable for integration into existing occupational health frameworks.[14] Progressive muscle relaxation offers several advantageous characteristics including ease of learning, minimal equipment requirements, and cost-effective implementation.

This study's objective was to evaluate progressive muscle relaxation intervention effects on compassion fatigue levels among nursing supervisors in general hospital settings. Findings are anticipated to contribute evidence supporting interventional strategies for healthcare worker wellness programs.

METHODS

This investigation employed a quasi-experimental pre-post control group design to assess progressive muscle relaxation intervention effectiveness on compassion fatigue levels among nursing supervisors.[15,16] The research population comprised all nursing supervisors at General Hospital in Semarang. Purposive sampling methodology selected thirty nursing supervisors meeting specific criteria: (1) minimum one-year supervisory experience, (2) moderate-to-high compassion fatigue scores on ProQOL screening, and (3) voluntary participation commitment. Exclusion criteria included: (1) concurrent psychological therapy participation, (2) serious musculoskeletal conditions, or (3) anticipated absence during study periods.

Recruitment involved direct invitation to eligible supervisors following administrative approval and departmental briefings. The process included study purpose explanation, procedural overview, and time commitment details. Eligible participants received computer-generated random assignment to intervention (n=15) or control groups (n=15) to minimize selection bias.

Compassion fatigue measurement utilized the professional quality of life scale (ProQOL) version 5, previously validated for Indonesian populations (α=0.87). This 30-item instrument comprises three subscales: compassion satisfaction, burnout, and secondary traumatic stress. Elevated burnout and secondary traumatic stress scores indicate increased compassion fatigue. Physical symptom assessment employed the Physical Symptoms Inventory (PSI), measuring stress-related somatic manifestations including muscular tension, headaches, sleep difficulties, and physical exhaustion.

Research proceeded through phases following ethical approval from Universita Karya Husada Semarang, Health Research Ethics Committee (No.174/EC/KEPK-UNKAHA/2025). Phase one involved baseline compassion fatigue and physical symptom assessments for both groups using standardized instruments. Phase two constituted the intervention period, with treatment group participants receiving eight progressive muscle relaxation sessions (twice weekly, 30-45 minutes each) conducted by trained physiotherapists over four weeks, while control group participants maintained standard routines.

Each session incorporated four components: (1) preparation phase involving comfortable positioning and three-minute breathing exercises, (2) tension-relaxation phase systematically engaging fifteen major muscle groups with 6-10 second contractions followed by 20-second relaxation periods, (3) integration phase promoting awareness of tension-relaxation differences, and (4) closure phase providing session feedback and independent practice guidance.[11]

Intervention participants received audio recordings for independent practice three times weekly, while control participants continued regular activities without specific interventions. Phase three involved post-intervention reassessment of compassion fatigue and physical symptoms after the four-week period.

All participants provided written informed consent after comprehensive study explanation including potential risks and benefits. Participant confidentiality protection utilized identification codes with secure data storage methods. Participants retained withdrawal rights without consequences. Control group participants received intervention access upon study completion as an ethical provision.

SPSS version 25.0 software conducted statistical analyses. Descriptive statistics characterized participant demographics. Shapiro-Wilk tests assessed normality. Paired t-tests analyzed within-group pre-post changes, while independent t-tests evaluated between-group differences. Statistical significance was set at $p<0.05$.

RESULTS

Study participants averaged 42.3±6.7 years of age with 5.7±3.2 years of supervisory experience. Female participants comprised 76.7% of the sample, with 80% holding Bachelor of Nursing degrees and 20% holding Master of Nursing degrees. No significant demographic differences existed between intervention and control groups ($p>0.05$).

Progressive muscle relaxation intervention demonstrated significant effectiveness in reducing compassion fatigue levels among nursing supervisors following four weeks of treatment. **Table 1** shows the comparison of compassion fatigue scores measured with the ProQOL. The intervention group exhibited significant compassion fatigue score reduction from 28.7±4.2 to 19.5±3.9 ($p<0.001$), while control group scores showed no significant change ($p=0.082$). Post-intervention comparison revealed significant between-group differences ($p<0.001$).

Progressive muscle relaxation intervention produced beneficial effects on physical manifestations associated with compassion fatigue. **Table 2** presents the changes in physical symptom scores assessed using the Physical Symptoms Inventory. Intervention participants demonstrated significant improvements across all physical manifestation parameters ($p<0.05$), with most substantial

reductions occurring in muscular tension and physical exhaustion measures.

DISCUSSION

This research validates progressive muscle relaxation as an effective intervention for alleviating compassion fatigue among nursing supervisors. Results align with previous investigations demonstrating progressive muscle relaxation efficacy in reducing anxiety and stress within healthcare populations, though applied in different contexts.

The proposed mechanism for progressive muscle relaxation effectiveness in compassion fatigue management operates through multiple pathways. Systematic muscle tension-relaxation cycles interrupt chronic stress patterns associated with compassion fatigue by activating relaxation responses through sympathetic nervous system inhibition and parasympathetic enhancement, characterized by reduced blood pressure, heart rate, and respiratory rate.[16,17]

Additionally, progressive muscle relaxation enhances individual proprioceptive awareness, enabling earlier tension recognition and proactive management before significant problems develop.[13] Enhanced bodily awareness supports emotional regulation and compassion fatigue management strategy development. Dedicated progressive muscle relaxation time also provides "self-care intervals," allowing nursing supervisors to temporarily disengage from occupational demands and focus on personal wellness.[18,19]

The significant reduction in physical compassion fatigue components experienced by intervention participants demonstrates the interconnection between physical and mental wellbeing. Muscular tension, headaches, sleep dysfunction, and physical exhaustion represent tangible manifestations of sustained psychological strain experienced by those with compassion fatigue. Progressive muscle relaxation appears to intervene with physical components, creating cascading positive effects on mental wellbeing and empathetic capacity.[13,20]

Physical parameters of muscular tension and physical exhaustion showed the greatest improvements, suggesting physical interventions are particularly effective for addressing somatic compassion fatigue components.[21] These findings support incorporating physical interventions as components in comprehensive compassion fatigue approaches alongside commonly utilized psychological strategies.[22,23]

Progressive muscle relaxation implementation in hospital occupational health programs presents numerous practical considerations. The intervention is relatively simple to learn, requires minimal equipment, and can be performed independently following training. No contraindications exist for this non-invasive treatment approach, making it suitable for diverse healthcare worker populations.[24]

Recent international studies support mind-body intervention inclusion in healthcare worker wellness programs. Chen et al.'s systematic review found physical relaxation techniques effective for reducing occupational stress in nurses, with effect sizes comparable to psychological interventions. Similarly, Rodriguez-Almagro et al. found structured relaxation programs effective in reducing burnout symptoms and improving job satisfaction in hospital staff.[25]

However, intervention effectiveness may vary among individuals, with factors such as motivation levels, independent practice compliance, and compassion fatigue severity influencing individual outcomes. Furthermore, this study's short duration (four weeks) limits conclusions regarding long-term intervention effects.

Several limitations should be considered when interpreting results. First, the four-week intervention timeframe may not accurately reflect benefit sustainability. Second, the small sample size from a single hospital may limit result generalizability to other healthcare settings. Third, self-reported measures may have introduced response bias through socially desirable responses. Fourth, lack of long-term follow-up prevents assessment of intervention durability. Finally, the quasi-experimental design without randomization creates potential selection bias despite demographic characteristic controls.

CONCLUSION

Progressive muscle relaxation intervention effectively reduced compassion fatigue levels among nursing supervisors while significantly decreasing associated physical symptoms. This represents a practical, evidence-based, non-invasive approach for addressing common occupational health challenges facing healthcare professionals.

Based on these findings, we recommend implementing progressive muscle relaxation in hospital occupational health programs, particularly for nursing

Table 1. Compassion between pre- and post-intervention of the professional quality of life scale (ProQOL)

Group	Pre-intervention (Mean±SD)	Post-intervention (Mean±SD)	P-value
Intervention (n=15)	28.7±4.2	19.5±3.9	<0.001
Control (n=15)	27.9±4.6	26.9±4.3	0.082
Between-group P-value	0.614	<0.001	

Table 2. The score changes of the physical symptom inventory (PSI) between intervention and control groups

Physical manifestation	Intervention group	Control group
Muscular tension	3.7±0.7	2.1±0.6*
Headache frequency	3.3±0.8	1.9±0.7*
Sleep disturbances	3.5±0.8	2.1±0.7*
Physical exhaustion	3.8±0.8	2.3±0.8*
Total PSI score	30.7±4.2	19.3±3.9*

*P-value <0.050

supervisors at higher risk of compassion fatigue development and healthcare professionals in managerial positions. Hospitals should train internal facilitators to develop and implement independent programs for enhanced sustainability.

Future research should incorporate longer follow-up periods to better understand progressive muscle relaxation's long-term efficacy for compassion fatigue symptom reduction. Additionally, progressive muscle relaxation may prove more effective when combined with psychological interventions, potentially offering more comprehensive strategies for healthcare professionals addressing compassion fatigue.

Further investigation into organizational factor impacts on compassion fatigue intervention effectiveness would enhance understanding of contextual influences on treatment outcomes and support implementation across various healthcare contexts.

ETHICAL APPROVAL

The Health Research Ethics Committee of Karya Husada University Semarang approved this study (No.174/EC/KEPK-UNKAHA/2025). Written informed consent was obtained from all participants following detailed research objective and methodology explanations. Data confidentiality was maintained through identity code usage with secure storage protocols.

CONFLICT OF INTEREST

The author declares no conflicts of interest regarding this research.

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AUTHOR CONTRIBUTIONS

TIP designed research methodology, conducted data collection, performed statistical analyses, and prepared the manuscript.

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