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Management

MINDFULNESS AND MUSCULOSKELETAL PAIN AMONG HEALTHCARE PROFESSIONALS – A CROSS-SECTIONAL STUDY

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ABSTRACT **Background:** Healthcare professionals are routinely exposed to physically demanding tasks, prolonged working hours, and high occupational stress, increasing their risk of developing musculoskeletal pain (3). Mindfulness, defined as present-moment awareness with a non-judgmental attitude, has been shown to enhance stress regulation and body awareness (1); however, evidence examining its relationship with musculoskeletal pain in healthcare settings remains limited. **Objective:** To assess the prevalence of musculoskeletal pain among healthcare professionals, evaluate levels of mindfulness, and examine the relationship between mindfulness and musculoskeletal pain intensity. **Methods:** A cross-sectional observational study was conducted among 400 healthcare professionals aged 25–66 years, including doctors, nurses, physiotherapists, and allied healthcare staff. Mindfulness was assessed using the Mindful Attention Awareness Scale (MAAS), while musculoskeletal pain intensity was measured using the Visual Analog Scale (VAS). Descriptive statistics were used to summarize demographic and clinical variables, and Pearson's correlation coefficient was applied to evaluate the relationship between mindfulness and pain intensity. Statistical significance was set at $p < 0.05$. **Results:** Musculoskeletal pain was commonly reported across multiple body regions, including the neck, shoulders, back, hips, wrists/hands, knees, and ankles/feet. Mean VAS scores indicated moderate pain intensity across all regions. A statistically significant negative correlation was observed between mindfulness and pain intensity in all assessed body regions (r ranging from −0.704 to −0.838, $p < 0.00001$), indicating that higher mindfulness levels were consistently associated with lower pain severity. **Conclusion:** The findings demonstrate a significant inverse relationship between mindfulness and musculoskeletal pain among healthcare professionals. Mindfulness may act as a protective factor against occupational stress and physical strain. Integrating mindfulness-based interventions into workplace wellness programs may provide a cost-effective, non-pharmacological approach to reducing musculoskeletal pain and improving overall well-being in healthcare professionals.

KEYWORDS : Mindfulness, stress, musculoskeletal pain, healthcare, workplace

INTRODUCTION

Healthcare professionals are frequently exposed to demanding work conditions, including extended working hours, elevated stress levels, and tasks that involve physical strain and repetitive movements (1). These factors significantly increase the likelihood of developing musculoskeletal pain. The most commonly affected regions are the back, neck, and shoulders, followed by other joints such as the wrists and knees. Such physical discomfort not only compromises the health and well-being of healthcare workers but may also reduce their efficiency, thereby impacting the quality of patient care.

Mindfulness can be defined as a state of conscious awareness in which individuals intentionally focus on the present moment while maintaining a non-judgmental and accepting attitude toward their thoughts, emotions, and bodily sensations (2). It is both a mental practice and a therapeutic approach that fosters self-regulation, emotional well-being, and resilience in professional and personal contexts (1).

Mindfulness at the workplace helps employees manage stress, improve focus, and respond thoughtfully to challenges, leading to better decision-making, healthier workplace relationships, and enhanced overall well-being. It also helps in preventing aches and pains by making the individual more aware of their positions and movements (3). However, there is limited data on the relationship between mindfulness and musculoskeletal pain in healthcare professionals. This study, therefore, aims to address this gap.

Objectives

1. To study the prevalence of musculoskeletal pain among healthcare professionals.
2. To assess the level of mindfulness
3. To study the relationship between mindfulness and musculoskeletal pain using the Visual Analog Scale (VAS).

Methods

Study Design

This study was designed as a cross-sectional observational study aimed at exploring the relationship between mindfulness and musculoskeletal pain among healthcare professionals.

Participants

The study included healthcare professionals such as doctors, nurses, physiotherapists, and healthcare staff working in clinical and hospital settings. A convenience sampling method was used to collect data. Inclusion criteria required participants to be actively employed in their profession at the time of data collection. Individuals with a prior diagnosis of chronic pain conditions not related to occupational exposure, or those with recent injuries, were excluded to minimise confounding factors.

Tools

1. Mindfulness – Mindfulness was measured using a standardised and validated instrument using the Mindful Attention Awareness Scale [MAAS].

2. Musculoskeletal Pain – Pain intensity was assessed using the **Visual Analog Scale (VAS)**, a 10-centimetre line anchored at 0 (no pain) and 10 (worst imaginable pain).

Procedure

After obtaining approval, participants were provided with a self-administered questionnaire that included the mindfulness scale, the VAS for musculoskeletal pain, and demographic details. Information collected included age, gender, profession, and years of professional experience. Data collection was conducted within the workplace setting during breaks to minimise interference with patient care responsibilities. Participation was voluntary, and confidentiality was maintained throughout the process.

Ethical Considerations

Data confidentiality was strictly maintained, and participants were assured that their responses would be used solely for research purposes.

Statistical Analysis

Data were coded and entered into SPSS for analysis. Descriptive statistics were used to summarise demographic variables, mindfulness scores, and pain intensity. The Pearson correlation coefficient was employed to determine the relationship between mindfulness and musculoskeletal pain. A p-value of <0.05 was considered statistically significant.

RESULTS

Data were entered in Microsoft Excel. After data cleaning data were imported to Statistical Package for Social Sciences version 25 and analysed using the same. Data were analysed for descriptive and

inferential statistics. Data were presented in tabular and graphical formats. Graphs were plotted in Excel. Pearson's correlation was used to check for correlation between the variables. P value <0.05 was considered statistically significant. The analysis was done for 400 participants. The data included participants in the age from the age 25 to 66 years. The data had 118 Males and 282 females. The analysis revealed musculoskeletal pain in multiple body regions. Neck pain (n=61) was primarily linked to prolonged bending, poor posture, and stress, with an average pain intensity of 5.52 ± 2.10 on the VAS and a mean mindfulness score of 40.31 ± 17.04. A moderate negative correlation ($r = -0.704$, $p < 0.00001$) indicates that higher mindfulness levels were associated with lower neck pain intensity. Shoulder pain (n=56), commonly resulting from patient lifting, overhead reaching, and repetitive tasks, showed a mean VAS score of 6.34 ± 1.92 and mindfulness score of 38.96 ± 17.07, with a strong negative correlation ($r = -0.838$, $p < 0.00001$), suggesting a robust inverse relationship between mindfulness and pain severity.

Back pain (n=60), attributed to stooping over patients or equipment, presented a mean VAS of 5.66 ± 2.36 and mindfulness score of 41.83 ± 17.49, showing a moderate negative correlation ($r = -0.759$, $p < 0.00001$). Similarly, hip pain (n=62), associated with long standing hours, bending, and manual handling, showed a mean VAS of 5.18 ± 2.13 and mindfulness score of 44.48 ± 16.12, with a moderate negative correlation ($r = -0.765$, $p < 0.00001$). Pain in the wrists and hands (n=55), due to repetitive fine motor activities such as IV insertion and typing, showed a mean pain intensity of 5.55 ± 2.06 and mindfulness score of 44.18 ± 15.53, also with a moderate negative correlation ($r = -0.739$, $p < 0.00001$).

For the knees (n=57), where prolonged standing and walking during shifts were primary causes, the mean VAS was 5.76 ± 2.29 and mindfulness 41.45 ± 16.57, with a moderate negative correlation ($r = -0.741$, $p < 0.00001$). Lastly, ankle and foot pain (n=49) shared similar occupational causes and exhibited a mean VAS of 5.52 ± 2.07 and mindfulness score of 43.12 ± 16.65, showing a strong negative correlation ($r = -0.800$, $p < 0.00001$).

Overall, across all body regions, the findings indicate a consistent and statistically significant inverse relationship between mindfulness and pain intensity. This suggests that individuals with higher mindfulness levels tend to report lower musculoskeletal pain, emphasizing the potential role of mindfulness-based interventions in mitigating occupational pain among healthcare professionals.

Table 1. Musculoskeletal Pain Sites, Occupational Causes, Average VAS Scores, And Correlation With Mindfulness (MAAS)

Body Region	Common Occupational Causes	Mean VAS (0–10)	Mean Mindfulness Score (MAAS, 14–84)	Correlation (r)	Interpretation	P value
Neck (n=61)	Prolonged bending, poor posture, stress	5.52+/-2.10	40.31+/-17.04	-0.704	Moderate negative correlation	<0.00001
Shoulders (n=56)	Patient lifting, overhead reaching, repetitive tasks	6.34+/-1.92	38.96+/-17.07	-0.838	Strong negative correlation	<0.00001
Back (n=60)	Stooping over patients/equipment	5.66+/-2.36	41.83+/-17.49	-0.759	Moderate negative correlation	<0.00001
Hip (n=62)	Long-standing hours, bending, and manual handling	5.18+/-2.13	44.48+/-16.12	-0.765	Moderate negative correlation	<0.00001
Wrists/Hands (n=55)	Repetitive fine motor tasks (IV insertion, typing)	5.55+/-2.06	44.18+/-15.53	-0.739	Moderate negative correlation	<0.00001
Knees (n=57)	Prolonged standing, walking during shifts	5.76+/-2.29	41.45+/-16.57	-0.741	Moderate negative correlation	<0.00001
Ankle/foot (n=49)	Prolonged standing, walking during shifts	5.52+/-2.07	43.12+/-16.65	-0.800	Strong negative correlation	<0.00001

DISCUSSION

The findings of this study indicate that higher mindfulness is strongly associated with lower musculoskeletal pain among healthcare professionals. These findings also suggest that mindfulness may function as a psychological buffer, enabling individuals to better manage occupational stress and physical strain.

The results align with prior research highlighting the role of mindfulness in pain modulation and stress reduction. Potential mechanisms underlying this relationship include enhanced body awareness, greater acceptance of discomfort, and decreased tendencies toward catastrophizing.

Considering the high prevalence of musculoskeletal pain within healthcare professions, the integration of mindfulness-based interventions into workplace wellness programs represents a promising, cost-effective approach to improving staff well-being and mitigating pain-related disability.

CONCLUSION

This study highlights a significant negative correlation between mindfulness and musculoskeletal pain among healthcare professionals. The findings suggest that mindfulness may act as a protective factor against occupational stress and physical strain. Incorporating mindfulness-based interventions into workplace wellness programs could provide an effective, low-cost, and non-pharmacological strategy to reduce pain, enhance resilience, and improve the overall well-being of healthcare professionals.

Recommendations

1. Integrating mindfulness training into healthcare professional development programs.
2. Offering organizational support for mindfulness-based stress reduction (MBSR) sessions.
3. Conducting longitudinal research to establish causal links between mindfulness and reductions in musculoskeletal pain.
4. Combining physical ergonomics with mindfulness practices to address both physical and psychological determinants of pain.

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