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ORIGINAL ARTICLE

Workplace Strain: Neck Pain Prevalence Among Office Workers in Subang Jaya, Selangor

(Should be brief, specific, informative, and appropriate for indexing)

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ABSTRACT

Neck pain is a common musculoskeletal disorder among office workers, particularly those engaged in prolonged computer use. This cross-sectional study investigated the prevalence and associated risk factors of neck pain among 55 office workers in Malaysia using an online questionnaire. Findings showed that 63.7% of respondents reported frequent neck pain, with 32.8% experiencing symptoms lasting more than three months. Additionally, 36.3% reported interference with daily tasks, and 25.4% had taken sick leave due to neck pain in the past year. Statistical analysis revealed significant associations between neck pain and both age ($\chi^2 = 26.330$, $p = 0.001$) and years of working experience ($\chi^2 = 14.052$, $p = 0.029$). Workers aged 51–60 years demonstrated the highest prevalence of severe pain (60%), while younger workers aged 21–30 reported only 2.8% severe pain. Similarly, 36.8% of employees with more than six years of office experience experienced high severity pain, compared to none among those with less than one year of experience. Prolonged sitting was also a notable risk factor, with 56.4% of respondents sitting for 7–9 hours daily, correlating with higher pain complaints. These results highlight the importance of ergonomic interventions, posture training, and regular physical activity to mitigate neck pain among office workers in Malaysia.

Keywords: Neck pain, ergonomics, office workers, musculoskeletal disorder, workplace strain

INTRODUCTION

Neck pain is a common and often disabling musculoskeletal complaint, particularly among individuals engaged in sedentary occupations. The rise of digital and desk-based work has led to longer sitting hours and static postures, which contribute significantly to musculoskeletal stress. Globally, neck pain is one of the leading causes of disability and workplace absenteeism. In Malaysia, reports from the Department of Statistics and NIOSH indicate a consistent increase in cases of neck and upper limb musculoskeletal disorders among office workers. This study investigates the prevalence of neck pain and its associations with age, gender, work duration, and ergonomic factors among Malaysian office employees. Based on Figure 1, Occupational Musculoskeletal Disorders recorded 201 cases. The most occupational injuries involve injury's location of the Upper Limb (8,819 cases), Lower Limb (4,154 cases), while Neck contain 50 cases while multiple locations of injury recorded 2,676 cases. (Department of Statistics Malaysia, 2021)

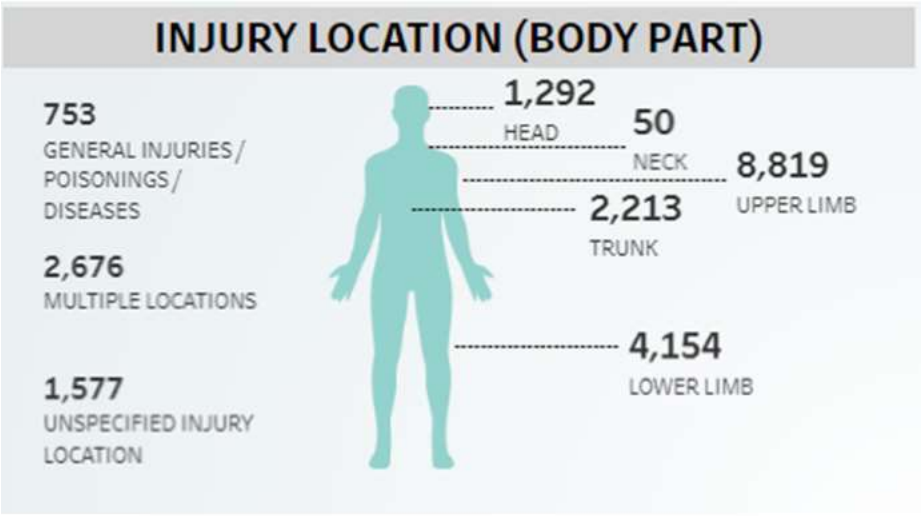

Figure 1: Number of Occupational Injuries by Type of Injury & Injury Location, 2021 (Department of Statistics Malaysia, 2021)

Neck pain has become increasingly prevalent among office workers who extensively use computers for academic or business purposes. Studies suggest that between 42% to 69% of office workers have reported experiencing neck pain within the last year. Factors such as sustained posture, repetitive use of upper extremities, prolonged computer usage hours, work environment conditions, and inadequate work-rest cycle control contribute to the persistence of neck pain. Unfortunately, this pain often goes untreated, leading to its chronicity and recurrence. Consequently, individuals affected by neck pain endure not only a significant economic burden but also substantial social challenges and a diminished quality of life. Therefore, there is a pressing need for targeted interventions and management strategies to provide regular care and alleviate this issue (Lee, J. et al., 2017)

Numerous research inquiries have explored the correlation between neck discomfort and workplace circumstances. Earlier studies have pinpointed office employees as a particular demographic highly susceptible to experiencing neck pain, with prevalence rates over a year significantly surpassing those in the broader population (Hush, J. M. et al., 2006)

For instance, research indicates that the one-year prevalence of neck pain among office workers was 59% at a Hong Kong university and 63% among medical secretaries in a Swedish study. Although neck pain is commonly believed to stem from multiple factors, it remains uncertain which specific factors elevate the risk for office workers. Proposed factors within this professional category include individual variables (such as gender), aspects of the work environment (such as repetitive tasks, exposure levels), psychosocial elements (such as stress, high job demands, and limited decision-making authority), and perceived muscular tension. (Hush, J. M. et al., 2006)

Neck pain exerts both individual and societal impacts. On an individual level, it leads to decreased functionality and quality of life, along with heightened levels of pain and disability. At the societal level, neck pain incurs significant health-related economic repercussions. For instance, in Switzerland, the annual direct costs associated with neck and back pain reach CHF 3.8 billion, while indirect costs, encompassing absenteeism and presenteeism, amount to CHF 7.5 billion. These consequences gain greater significance given the high recurrence rate and potential for persistent neck pain. Consequently, there is a pressing need to alleviate the burden of neck pain among office workers, a concern shared not only by affected individuals but also by employers and insurance companies (Aegerter, A. M. et al., 2022)

METHODOLOGY

The framework considered demographic characteristics (age, gender, years of working experience, and average daily sitting hours) as independent variables and prevalence of neck pain as the dependent variable. A quantitative, cross-sectional study was conducted over a three-month duration (January–March 2024). This design enabled the identification of associations between demographic and occupational risk factors and the prevalence of neck pain at a single point in time.

The study involved 55 full-time office workers from office in Subang Jaya, Selangor. Participants were recruited through stratified sampling to ensure balanced representation of males (45.5%, n=25) and females (54.5%, n=30). Eligibility criteria required participants to be aged 21–65 years and to have at least one year of office-based work experience.

Data were collected using a structured online questionnaire (Google Form) adapted from the Maastricht Upper Extremity Questionnaire (MUEQ) (Bekiari, E.I. et al., 2011). The instrument consisted of five sections:

Section A: Demographic data (age, gender, years of office experience, daily sitting hours)

Section B: Prevalence and severity of neck pain

Section C: Medical history and pain management

Section D: Occupational risk factors and workplace ergonomics

Section E: Lifestyle and physical activity

Each item was rated using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The questionnaire also captured specific categories of neck pain symptoms, such as frequency, duration (acute vs. persistent >3 months), work interference, medical treatment, and absenteeism. The instrument underwent a pilot test with 10% of the sample (n=6) to assess reliability. Cronbach's Alpha for the full instrument was 0.816, indicating high internal consistency.

Data were analyzed using SPSS version 27. Descriptive statistics summarized demographic data and prevalence rates. Inferential analyses included Chi-square tests to examine associations between categorical variables (e.g., age groups, gender, work experience) and neck pain prevalence. Correlation tests (Spearman's rho) were used to assess relationships between continuous variables such as sitting time and severity of symptoms. Data were collected via a structured online questionnaire adapted from the Maastricht Upper Extremity Questionnaire (MUEQ) (Bekiari, E.I. et al., 2011). Prior to full deployment, a pilot study was conducted to validate the modified instrument, which included adjustments to the original questionnaire. Reliability was assessed using Cronbach's alpha, with values between 0.60–0.70 considered acceptable and ≥0.80 indicating high internal consistency.

RESULT AND DISCUSSION

Reliability Test

A Cronbach's alpha value exceeding 0.80 indicates excellent internal consistency, demonstrating that the measurement instrument exhibits high reliability and is appropriate for use in this study.

Relationship Between Gender and Prevalence of Neck Pain

The distribution of neck pain severity showed gender-based differences in prevalence, with males dominating the high pain category (20.0% male vs. 10.0% female) and females dominating the low pain category (56.7% female vs. 32.0% male). However, the chi-square test results ($\chi^2 = 3.496$, df = 2, $p = 0.174$) indicated no statistically significant association between gender and neck pain severity in the studied population. Since the p-value exceeded the conventional significance threshold ($p > 0.05$), we failed to reject the null hypothesis, concluding that the observed differences likely represent random variation rather than a true gender-based pattern. These findings align with previous research by Shariat et al. (2018), who similarly found no significant relationship between gender and neck pain severity ($p > 0.05$).

Relationship Between Age and Prevalence of Neck Pain

The study revealed a significant age-related pattern in neck pain prevalence. Younger workers (21-30 years) predominantly reported low pain levels (61.1%), with only 2.8% experiencing high pain. In contrast, older workers (51-60 years) showed the highest prevalence of high pain (60.0%). The Pearson chi-square test demonstrated a statistically significant association between age groups and neck pain prevalence ($\chi^2 = 26.330$, $p = 0.001$). The substantial χ^2 value reflects marked deviations from expected distributions, particularly among older workers (51-60 years), indicating non-random, age-dependent variations in neck pain occurrence.

The statistically significant result ($p < 0.05$) provides robust evidence to reject the null hypothesis, confirming that neck pain prevalence varies significantly across age groups. This finding aligns with clinical expectations of increased musculoskeletal degeneration with age. The odds ratio further supports this relationship, revealing that individuals older than 30 years had 2.61 times higher odds of developing neck pain compared to younger workers (OR = 2.61, 95% CI 1.32–3.47). These results are consistent with established literature documenting age-related degenerative changes in the cervical spine (Cagnie et al., 2006).

Relationship Between Years of Working in Office Environment and Prevalence of Neck Pain

The study revealed distinct patterns in neck pain prevalence based on work experience duration. Workers with less than one year of experience predominantly

reported low pain levels (66.7%), with no cases of high pain recorded. Those with 1-3 years of experience demonstrated a more balanced distribution, with 50.0% reporting low pain, 43.8% medium pain, and 6.3% high pain. In contrast, workers with more than six years of office experience showed the highest prevalence of high pain (36.8%) and the lowest prevalence of low pain (26.3%).

Statistical analysis using Pearson's chi-square test revealed a significant association between work experience duration and neck pain prevalence (χ^2 = 14.052, p = 0.029). The statistically significant result ($p < 0.05$) led to rejection of the null hypothesis, indicating that years of work experience and neck pain prevalence are significantly associated. The moderate effect size (p = 0.029) suggests a clinically meaningful relationship, consistent with findings from age-related analyses which also showed significant associations ($p < 0.05$).

These findings align with existing literature demonstrating that office workers with longer work experience report higher rates of neck pain (Demissie et al., 2024). The observed pattern likely reflects cumulative exposure to workplace risk factors, as work-related musculoskeletal disorders (WMSDs) typically develop gradually through repetitive strain and occupational overuse.

Relationship Between Average Daily Sitting Time at Work and Prevalence of Neck Pain

The analysis of daily sitting time and neck pain prevalence revealed several notable patterns. Workers reporting less than 4 hours of daily sitting exhibited no cases (0%) of high pain. The 4-6 hour sitting group demonstrated the highest prevalence of high pain (20%), exceeding the overall prevalence of 14.5%. The largest subgroup (7-9 hours) showed a balanced distribution across pain levels, while the more than 9 hours group (n=4) displayed equal distribution across all pain categories.

Pearson's chi-square test results (χ^2 = 3.236, p = 0.779) indicated no statistically significant association between sitting duration and neck pain prevalence. Although the 4-6 hours group showed the highest proportion of high pain (20%), this finding likely represents chance variation due to small sample sizes rather than a true association. These results suggest that sitting duration alone does not significantly contribute to neck pain in this population.

This finding aligns with existing literature. Hallman et al. (2016) found that increased sitting time at work had a protective effect on neck-shoulder pain among blue-collar workers, potentially due to reduced exposure to physically demanding tasks and increased recovery time. Similarly, Picavet et al. (2016) reported that workers sitting ≥4 hours per week had lower risk of chronic upper extremity pain compared to those sitting <3 hours, suggesting that sedentary work may reduce physical strain. These studies collectively indicate that occupational sitting may serve as a proxy for other risk factors rather than directly contributing to musculoskeletal pain.

Prevalence and Risk Factors of Neck Pain Among Office Workers

The study revealed a high prevalence of neck pain among office workers, with 63.7% of respondents (n=55) reporting symptoms during or after work. The majority of participants were aged 21-30 years (65%) and reported prolonged sitting durations of 7-9 hours daily (56.4%). Statistical analysis demonstrated significant associations between neck pain and both age (p=0.001) and work experience (p=0.029), with older workers and those with longer occupational exposure reporting more severe symptoms. These findings align with existing literature identifying age as a key determinant of neck pain development (Kazeminasab et al., 2022) and occupational factors as significant contributors to musculoskeletal disorders (Mekonnen et al., 2020). In contrast, no significant association was found beteen gender and neck pain prevalence (p=0.174).]

Contributing Factors and Workplace Implications

Several modifiable risk factors emerged from the study, including inadequate workstation ergonomics (20%), prolonged uninterrupted screen time (32.7%), and physical inactivity (20%). Notably, only 14.6% of participants reported receiving ergonomic training from their employers. These findings corroborate existing evidence emphasizing the importance of ergonomic interventions and regular movement breaks in preventing work-related musculoskeletal disorders (Mehrparvar, A. H et al., 2014).

CONCLUSION

This study confirms the high prevalence of neck pain among Malaysian office workers and identifies age and occupational duration as significant risk factors. The results underscore the need for organizational interventions, including:

1. Implementation of comprehensive ergonomic programs
2. Regular movement breaks during work hours
3. Workplace health education initiatives

Future research should investigate the longitudinal effects of specific ergonomic interventions on neck pain prevalence in office settings.

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