

A The Impact of Ergonomic Workstation Conditions on Employee Stress Outcomes: The Roles of Health, Body Posture, and Environmental Humidity

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ABSTRACT

Workplace stress has become an increasingly important issue in office-based industries, particularly in the banking sector, due to its negative impact on employee well-being and organizational performance. Ergonomic workstation conditions, including employee health, body posture, and environmental humidity, may significantly contribute to stress outcomes among employees. This study examines the influence of ergonomic workstation factors on workplace stress among employees in a Malaysian financial institution. A quantitative cross-sectional research design was employed, and data were collected from 118 employees using a structured questionnaire adapted from validated ergonomic and workplace stress scales. The data collected were analyzed using SPSS version 23 through reliability analysis, descriptive statistics, Pearson correlation analysis, and multiple regression analysis. The findings revealed that health, body posture, and environmental humidity were significantly associated with workplace stress. Among the examined variables, health emerged as the strongest predictor of stress outcomes. The study highlights the importance of ergonomic interventions in enhancing employee comfort, reducing workplace stress, and improving overall organizational well-being. The findings also provide practical implications for organizational management and contribute to the growing body of literature on ergonomics and occupational stress within the Malaysian context.

Keywords— Workplace Stress, Ergonomics, Body Posture, Health, Environmental Humidity, Banking Sector, Malaysia

INTRODUCTION

Workplace stress has become a major concern worldwide, particularly in office-based and knowledge-intensive industries. Rapid technological advancement, increasing workload demands, prolonged sedentary work, and high-performance expectations have contributed to growing levels of stress among employees. Stress is commonly defined as an individual's psychological and physiological response to demands that exceed his or her ability to cope effectively. Continuous exposure to stressful working conditions may result in adverse consequences, including poor mental and physical health, reduced productivity, absenteeism, low job satisfaction, and high employee turnover.

In modern office environments, ergonomic workstation design plays an important role in ensuring employee comfort, health, and overall well-being. Ergonomics refers to the scientific discipline concerned with designing work environments, systems, and tasks that fit employees' physical and cognitive capabilities. Poor ergonomic practices, such as inadequate seating arrangements, improper body posture, repetitive movements, and uncomfortable environmental conditions, may contribute to physical discomfort and psychological strain among employees.

Employees in the banking sector are particularly vulnerable to ergonomic-related stress because their daily tasks typically involve prolonged periods of sitting, extensive computer use, repetitive keyboard activities, and high levels of customer interaction. These conditions may increase the likelihood of musculoskeletal discomfort, fatigue, and occupational stress. Previous studies have demonstrated that poor ergonomic conditions may negatively influence employee health, work performance, and psychological well-being.

Although workplace stress has been extensively studied, limited empirical research has examined the combined influence of ergonomic workstation factors, particularly health, body posture, and environmental humidity, on stress outcomes within the Malaysian banking sector. Most previous studies have focused primarily on psychosocial factors while giving less attention to physical and environmental ergonomic conditions. Therefore, this study seeks to address this research gap by investigating how ergonomic workstation conditions influence workplace stress among employees in a Malaysian financial institution.

The findings of this study are expected to contribute to both theory and practice. Theoretically, the study expands the literature on ergonomics and occupational stress by examining multiple ergonomic dimensions simultaneously. Practically, the findings may assist organizational management in developing ergonomic interventions and workplace strategies to improve employee well-being and organizational performance.

LITERATURE REVIEW

Workplace Stress

Workplace stress refers to harmful physical and emotional responses that occur when job demands exceed an employee's ability to cope effectively. It can lead to burnout, low job satisfaction, anxiety, and reduced mental health. Research shows stressful work settings negatively affect both employees' wellbeing and organizational outcomes like productivity and turnover intentions. For example, a scoping review on stress measurement highlights how psychosocial and environmental demands shape employee stress and health outcomes, emphasizing the importance of understanding stress in office contexts.

Ergonomics and Workplace Stress

Ergonomics is the scientific study of designing work environments to suit employees' physical and psychological needs. Proper ergonomic workstation design can improve employee comfort, reduce physical strain, and enhance work performance. In contrast, poor ergonomic practices may contribute to musculoskeletal disorders, fatigue, discomfort, and workplace stress.

According to Fernandez and Marley (2020), ergonomic interventions such as adjustable chairs, suitable desk heights, proper monitor positioning, and supportive seating arrangements may reduce physical discomfort and improve employee well-being. Employees who work in poorly designed workstations are more likely to experience neck pain, back pain, shoulder discomfort, and fatigue, which may subsequently increase stress levels.

Recent ergonomic studies have also emphasized the importance of technology-assisted ergonomic solutions, including wearable posture monitoring devices and dynamic seating systems. These innovations may improve posture awareness and reduce prolonged physical strain among office employees.

Employees who spend long hours sitting without appropriate ergonomic support are particularly susceptible to musculoskeletal discomfort and stress-related symptoms. Therefore, ergonomic workstation design is essential in maintaining employee health and reducing occupational stress.

Health and Stress Outcomes

Employee health is a key predictor of stress outcomes. Poor physical health, such as chronic pain, fatigue, and discomfort, makes workers more susceptible to stress. Health issues can distract employees, lower motivation,

and increase psychological strain.

For instance, office workers exposed to prolonged static postures or repetitive tasks report higher levels of musculoskeletal pain and associated stress symptoms. This supports the idea that physical discomfort contributes directly to how stressed employees feel at work.

In addition, research indicates that workplaces with better ergonomics and health-focused design can improve overall well-being and reduce stress, reinforcing the link between physical health and psychological outcomes.

Body Posture and Stress

Body posture refers to the alignment and positioning of body parts while sitting, standing, or performing work-related activities. Proper posture is important for maintaining musculoskeletal health and reducing physical strain. Poor posture, such as slouching, leaning forward, or sitting in awkward positions for prolonged periods, may result in muscle tension, reduced blood circulation, and physical discomfort.

Hallman et al. (2021) reported that poor sitting posture among office employees contributes significantly to neck pain, shoulder pain, lower back discomfort, and fatigue. These physical conditions may subsequently increase stress levels and reduce employee performance.

The COVID-19 pandemic also highlighted the importance of ergonomic posture during remote working arrangements. Employees working from non-ergonomic environments, such as couches or dining tables, reported higher levels of musculoskeletal pain and psychological stress.

Maintaining proper posture through ergonomic workstation arrangements and employee awareness programs may reduce discomfort and improve employee well-being.

Environmental Humidity and Stress

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RESEARCH METHODOLOGY

Research Design

Body posture refers to the alignment and positioning of body parts while sitting, standing, or performing work-related activities. Proper posture is important for maintaining musculoskeletal health and reducing physical strain. Poor posture, such as slouching, leaning forward, or sitting in awkward positions for prolonged periods, may result in muscle tension, reduced blood circulation, and physical discomfort.

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Sample and Data Collection

The study population consisted of 180 employees working in the banking sector. Using Krejcie and Morgan's (1970) sampling table, a sample of 118 respondents was selected to ensure adequate representation of the population for statistical analysis. The sampling method ensured that the selected participants reflected the diversity of the workforce in terms of age, gender, job position, and work experience.

Data were collected using a structured questionnaire, which was divided into two main sections. The first section captured demographic information such as age, gender, education level, and job tenure. The second section included Likert-scale items measuring key variables: health, body posture, environmental humidity, and workplace stress outcomes. The questionnaire was administered in a manner that allowed respondents to complete it voluntarily and anonymously, ensuring confidentiality and encouraging honest responses.

Before the main data collection, a pilot test was conducted with a small group of employees to ensure the clarity, reliability, and validity of the questionnaire items. Feedback from the pilot test was used to refine the questions, making sure they accurately measured the intended variables. The final data collection was conducted over a set period, and all completed questionnaires were checked for completeness before being entered into SPSS for analysis.

RESULTS AND DISCUSSIONS

The reliability analysis showed all variables had good consistency, with Cronbach's alpha above 0.70, meaning the measurement items were reliable.

Descriptive results indicated that employees experienced moderate to high workplace stress, along with discomfort from poor health, prolonged sitting, and indoor environmental conditions. This suggests ergonomic-related stress factors are present.

Correlation analysis found that poor health, bad posture, and uncomfortable humidity were linked to higher stress levels. Multiple regression showed these factors explained 73.9% of stress outcomes, with health being the strongest predictor, followed by humidity and posture.

Poor body posture can cause musculoskeletal strain and fatigue, increasing stress. Similarly, uncomfortable humidity affects comfort, focus, and mood, raising stress levels.

Overall, the study shows that workplace stress is influenced not just by job demands but also by health, posture, and environmental conditions, highlighting the need for a holistic ergonomic approach.

CONCLUSION

This study investigated the influence of ergonomic workstation conditions on workplace stress among employees in a Malaysian financial institution. The findings revealed that health, body posture, and environmental humidity significantly influenced workplace stress outcomes.

Among the examined variables, health was identified as the strongest predictor of workplace stress. The findings demonstrate that poor ergonomic conditions may negatively affect employee comfort, physical well-being, and psychological health.

The study contributes to existing literature by providing empirical evidence regarding the importance of ergonomic workstation conditions in reducing workplace stress. The findings further support the importance of integrating ergonomic practices into organizational stress management strategies.

IMPLICATION OF THE STUDY

The findings of this study provide several important practical implications for organizations, particularly those operating in office-based environments.

First, organizations should improve ergonomic workstation design by providing adjustable chairs, ergonomic desks, and proper computer positioning to support correct body posture and reduce physical discomfort.

Second, management should promote employee health through workplace wellness initiatives, ergonomic training programs, and regular health awareness activities. These initiatives may help reduce fatigue, discomfort, and workplace stress.

Third, organizations should ensure that indoor environmental conditions, including humidity and air quality, are maintained at comfortable levels to enhance employee concentration, comfort, and well-being.

Fourth, organizational management should view ergonomic improvements as a long-term investment rather than an operational cost. Effective ergonomic practices may improve employee satisfaction, productivity, and organizational performance while reducing absenteeism and turnover.

Finally, organizations should develop clear occupational health and ergonomic policies to create healthier, safer, and less stressful work environments.

LIMITATION OF THE STUDY

First, the use of a cross-sectional research design limits the ability to establish causal relationships between ergonomic workstation conditions and workplace stress. Future studies are encouraged to employ longitudinal research designs to examine changes over time.

Second, the study relied on self-reported data, which may be influenced by subjective perceptions and common method bias. Future research may incorporate objective ergonomic assessments and physiological stress measurements to improve measurement accuracy.

Third, the study was conducted within a single organization in the banking sector, which may limit the generalizability of the findings to other industries and organizational settings.

Fourth, only three ergonomic factors were examined in this study. Future researchers are encouraged to investigate additional ergonomic and psychosocial variables, such as lighting, noise, workload, job autonomy, and supervisory support.

Finally, future studies should consider larger and more diverse samples to provide broader insights into workplace stress experiences across different employee groups and industries.

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