

ERGONOMIC AMONG HEALTHCARE WORKER

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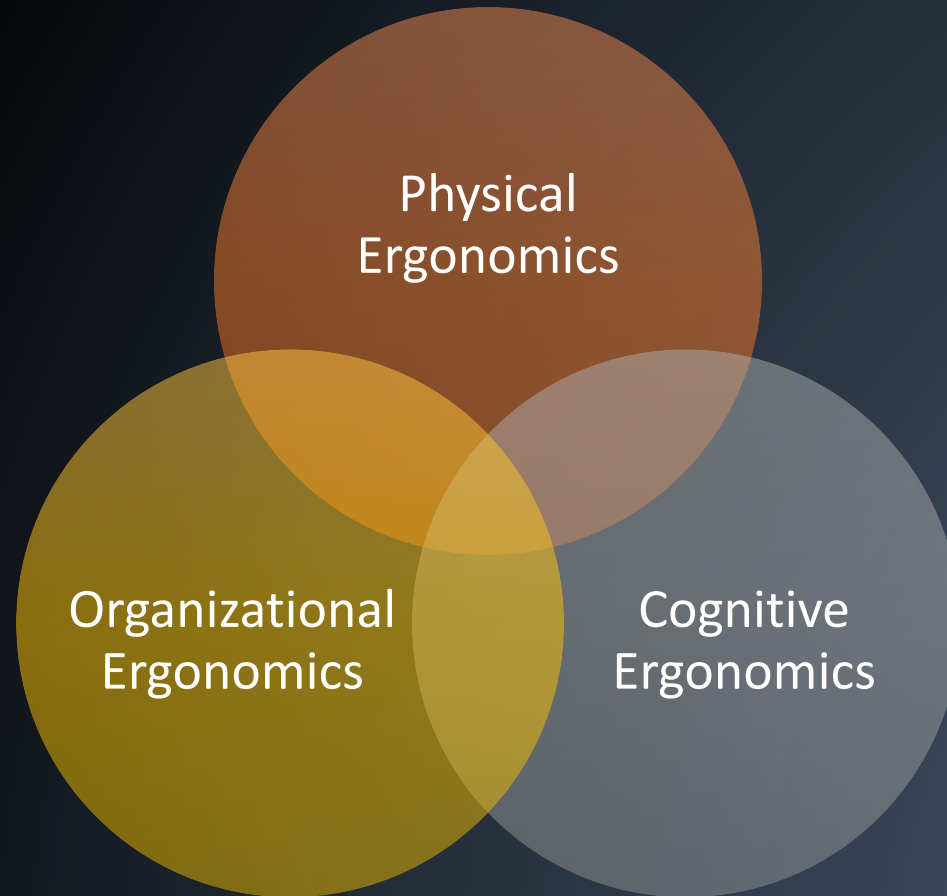




Introduction

- Ergonomics is a critical factor in the healthcare industry, focusing on designing work environments and tasks to fit the capabilities and limitations of healthcare workers.

Domain of Ergonomics





Physical Ergonomics

- Physical ergonomics focuses on optimizing the physical aspects of the work environment to ensure the well-being and safety of individuals. It involves designing workstations, tools, equipment, and tasks in a way that minimizes physical strain and promotes efficient and comfortable work practices. Physical ergonomics considers factors such as posture, biomechanics, manual handling, repetitive motions, and the prevention of musculoskeletal disorders.



Cognitive Ergonomics

- Cognitive ergonomics is concerned with understanding and enhancing the cognitive processes and mental workload of individuals in their work tasks. It involves designing tasks, systems, and interfaces to support human cognitive abilities, decision-making, and information processing. Cognitive ergonomics considers factors such as attention, perception, memory, problem-solving, decision-making, and **mental fatigue**.



Organizational Ergonomics

- Organizational ergonomics focuses on the optimization of socio-technical systems within an organization. It involves considering the interaction between individuals, work processes, organizational structures, and the overall work environment. Organizational ergonomics aims to create a **harmonious and supportive work environment that promotes efficiency, job satisfaction, and well-being**. It involves factors such as workload management, work schedules, communication, teamwork, training, and organizational culture



PHYSICAL ERGONOMIC

Research conducted

Risk Factors of Musculoskeletal Symptoms Among Healthcare Workers in a Public Hospital

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ABSTRACT

Introduction: This study aims to determine the risk factors of musculoskeletal symptoms (MSS) among healthcare workers in a public hospital. **Methods:** This cross-sectional study involved 121 respondents among healthcare workers (HCW) (doctors, nurses and physiotherapists) working in Emergency and Trauma Department and Physiotherapy Department in a public hospital by using universal sampling. Self-administered questionnaire containing questions on socio-demographical data, work characteristics, body movement and work tasks, Standardized Nordic Questionnaire for assessing musculoskeletal symptoms and Job Content Questionnaire (JCQ) for measuring psychosocial risk factors was used as the main instrument for this study. **Results:** Response rate was 81.88% and 95% of respondents reported to have at least one symptom at body site. The most prevalent symptom was neck pain (80.2%) followed by low back pain (79.3%), and shoulder pain (71.9%). Physiotherapists reported to have more symptoms of MSS than doctors and nurses ($\chi^2 = 6.84, p = 0.033$). For socio-demographic characteristics, only level of education had significant association with MSS ($\chi^2 = 7.25, p = 0.008$). Meanwhile, there were 14 body movements and work tasks had significant association (moderate) with MSS. For psychosocial risk factors, high job insecurity was significantly (fair) correlated with more MSS ($r = -0.302$). **Conclusion:** The prevalence of reported MSS at a number of body sites was high which were associated with socio-demographic background, work task characteristics, body movements and work tasks, and psychosocial risk factors.

Keywords: Musculoskeletal symptoms, Healthcare workers, Public hospital

THE PREVALENCE OF WORK-RELATED MUSCULOSKELETAL DISORDERS AND STRESS LEVEL AMONG HOSPITAL NURSES

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ABSTRACT

Hospital nurses receive enormous amounts of physical and mental workload which causes them to develop work-related musculoskeletal disorders (WRMSDs) and occupational stress. In this research, a cross-sectional study was carried out to identify the prevalence of WRMSDs, to evaluate the level of stress, and also to investigate the relationship between musculoskeletal complaints (MSCs) and stress level among one hundred and eight hospital nurses (n=108) in a government hospital. Data collection was done using three instruments, namely Nordic Musculoskeletal Questionnaire (NMQ), Workplace Ergonomic Risk Assessment Tool (WERA), and Stress Overload Scale Instrument (SOS). Based on the results obtained, a majority of the nurses suffer lower back pain whereas in terms of stress level, the nurses face relatively high stress level from their work. The relationship between MSCs and stress level was found to be absent. WRMSDs and stress are both multifactorial thus making it hard to conclude that the WRMSDs experienced by the nurses are caused by stress. Because of that, further study in relation to WRMSDs and stress is required to explore this issue.

Keywords: WRMSDs, NMQ, WERA, SOS

Abstract— A study was conducted among healthcare workers performing manual handling tasks at a private medical center (PMC) in Selangor to determine the prevalence of musculoskeletal disorders (MSDs). A total of 103 workers of the PMC were selected through simple random sampling which comprise of 32 respondents for administrative group and another 71 respondents for operative group of Malaysian citizen, not pregnant and never been involved with any type of accident that involved musculoskeletal system. Modified questionnaire was used to gather the information of respondents. In this study, Body Parts Symptoms Survey (BPSS) form was used to determine which of 12 body parts were exposed to the MSDs risks that can be associated with manual handling tasks. For assessment of manual handling, a posture-based analysis system for Rapid Entire Body Assessment (REBA) responsive to musculoskeletal risks in various tasks was used. Lower back region indicated the highest prevalence (21.4%) of MSDs among workers in PMC followed by shoulder (14.6%) and neck (13.6%). For assessment of manual handling, there was significant difference of REBA score between administrative and operational workers ($Z = 3.501, p = 0.001$). Manual handling was significantly associated with MSDs that involved all body parts for operative workers while for administrative workers, manual handling was significantly associated with shoulder ($r = 0.376, p = 0.034$), upper back ($r = 0.473, p = 0.010$), elbow ($r = 0.397, p = 0.024$), lower back ($r = 0.337, p = 0.050$) and arm ($r = 0.478, p = 0.016$). In conclusion, the prevalence of MSDs among healthcare workers is high at lower back region and there was significant association between manual handling and MSDs among them.

I.

INTRODUCTION

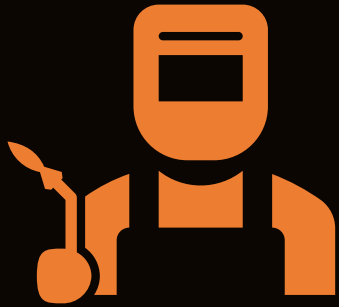
stretcher or bed to chair or toilet and back again, turning, bathing or dressing a patient. In health care, other relevant MSDs risk factors are weight of patient being moved and lifted, frequency of handling and moving patient, level of postural awkwardness tasks that require longer durations to perform [5].

II. LITERATURE REVIEW

The literature review and epidemiological studies have shown that MSDs risk factors can be categorise as physical factors, psychosocial factors and individual factors [6, 7, 8]. Example of physical factors are sustained or awkward postures, repetition of the same movements, forceful exertions, manual handling, frequent bending and twisting, hand-arm vibration, all-body vibration, mechanical compression, and cold. Psychosocial factors includes work pace, autonomy, monotony, work/rest cycle, task demands, job uncertainty, social support from colleagues and management can play an important role in increasing the risk of MSDs [9]. Meanwhile, individual factors are age, gender, professional activities, sport activities, domestic activities, recreational activities, alcohol/tobacco consumption and, previous MSDs.

Many past studies have focused on the prevalence and risk factors of low back pain among nurses. Moving or lifting patients in bed manually has been identified as a high risk activity and resulted 61% of the low back pain cases and 60% of the lost workdays [10]. Maul *et al.* [11] showed 18% of nursing personnel stopped working because of low

Definition



Ergonomics is the study of designing and arranging workplaces, products, and systems to fit the people who use them.



It aims to optimize human well-being, comfort, and performance while reducing the risk of injury and musculoskeletal disorders.

In Malaysia, ergonomic practices in healthcare are guided by several regulations and guidelines, including:

Occupational Safety and Health Act (OSHA)

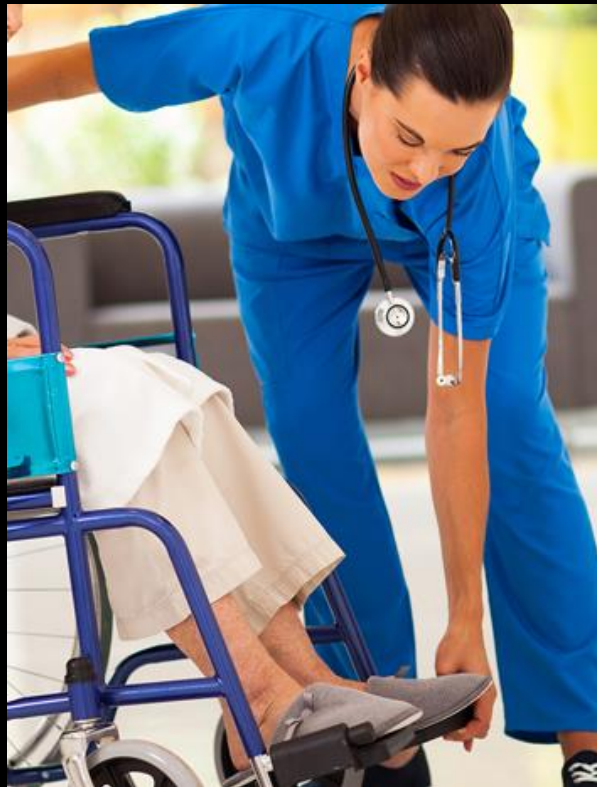
Guidelines on Ergonomics Risk Assessment at Workplace by the Department of Occupational Safety and Health (DOSH)

Malaysian Society for Occupational Safety and Health (MSOSH) guidelines

Ergonomic Hazards in Healthcare

- Common ergonomic hazards faced by healthcare workers include lifting and transferring patients, performing repetitive tasks, adopting awkward postures, and using improper body mechanics.
- These hazards can lead to musculoskeletal injuries, strains, and sprains.

Hazard among Healthcare worker



Awkward Postures

- Healthcare workers often perform tasks that require prolonged or repetitive bending, reaching, twisting, or stooping. These awkward postures can put strain on the musculoskeletal system, leading to musculoskeletal disorders (MSDs) such as back pain, neck pain, and shoulder injuries



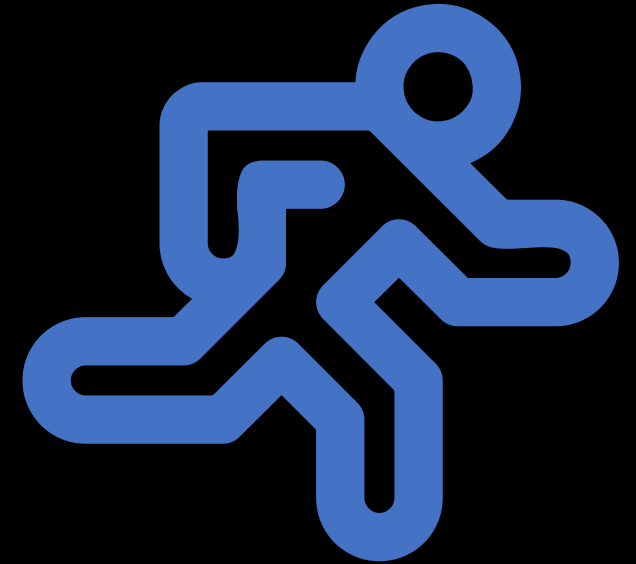
Manual Patient Handling

- Lifting, transferring, and repositioning patients manually can expose healthcare workers to high-risk activities. Overexertion during patient handling tasks is a significant contributor to MSDs. Improper lifting techniques, inadequate patient lifting equipment, and excessive workload further increase the risk.



Repetitive Tasks

- Healthcare workers may be involved in repetitive tasks such as typing, charting, or performing diagnostic procedures. Prolonged or repetitive motions without proper rest or ergonomic support can lead to conditions like carpal tunnel syndrome and tendinitis.



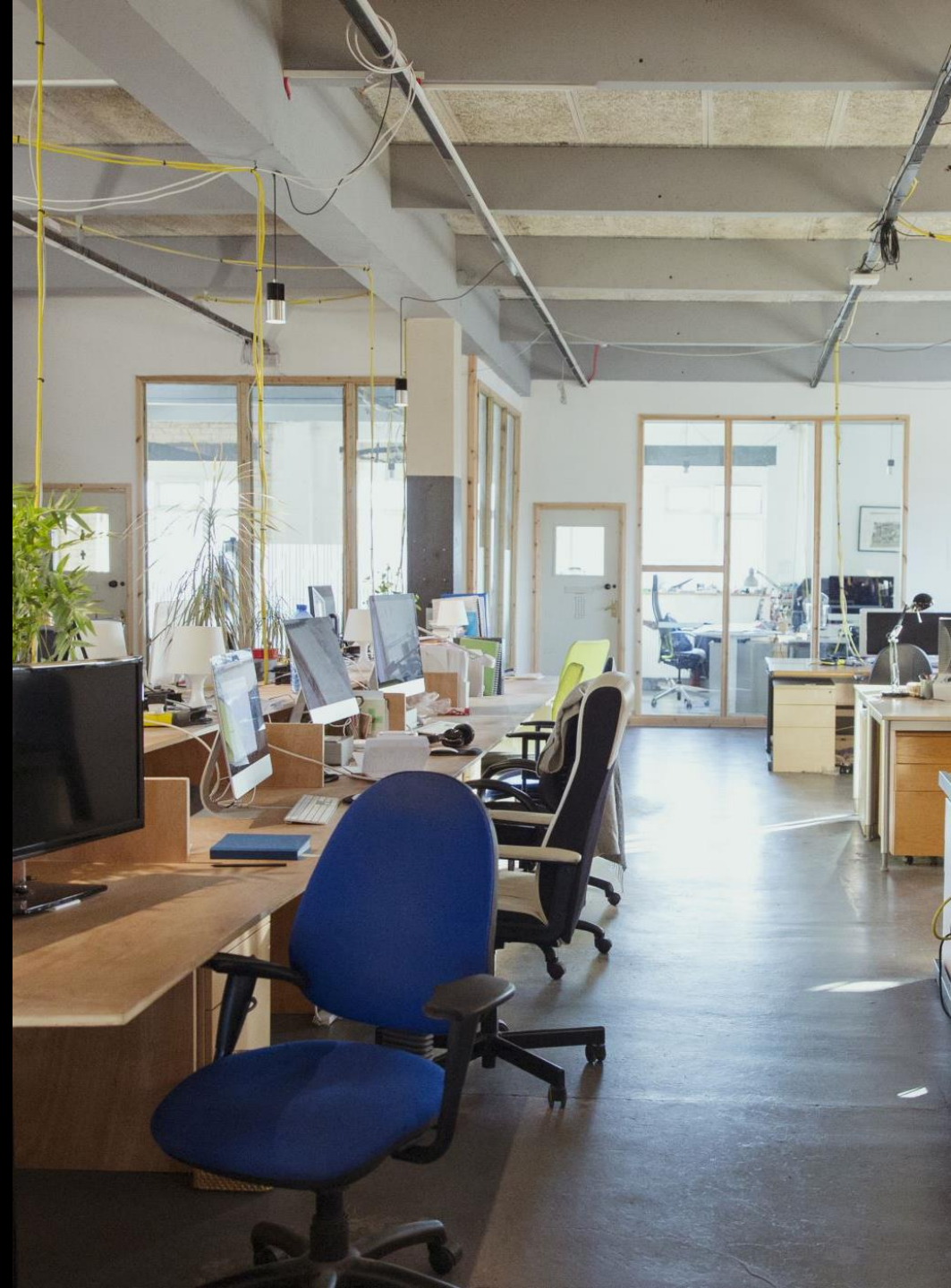


Forceful Exertions

- Forceful exertions, such as pushing heavy equipment or exerting excessive force during patient care, can strain the muscles and joints. This can result in injuries and pain in the shoulders, wrists, and back

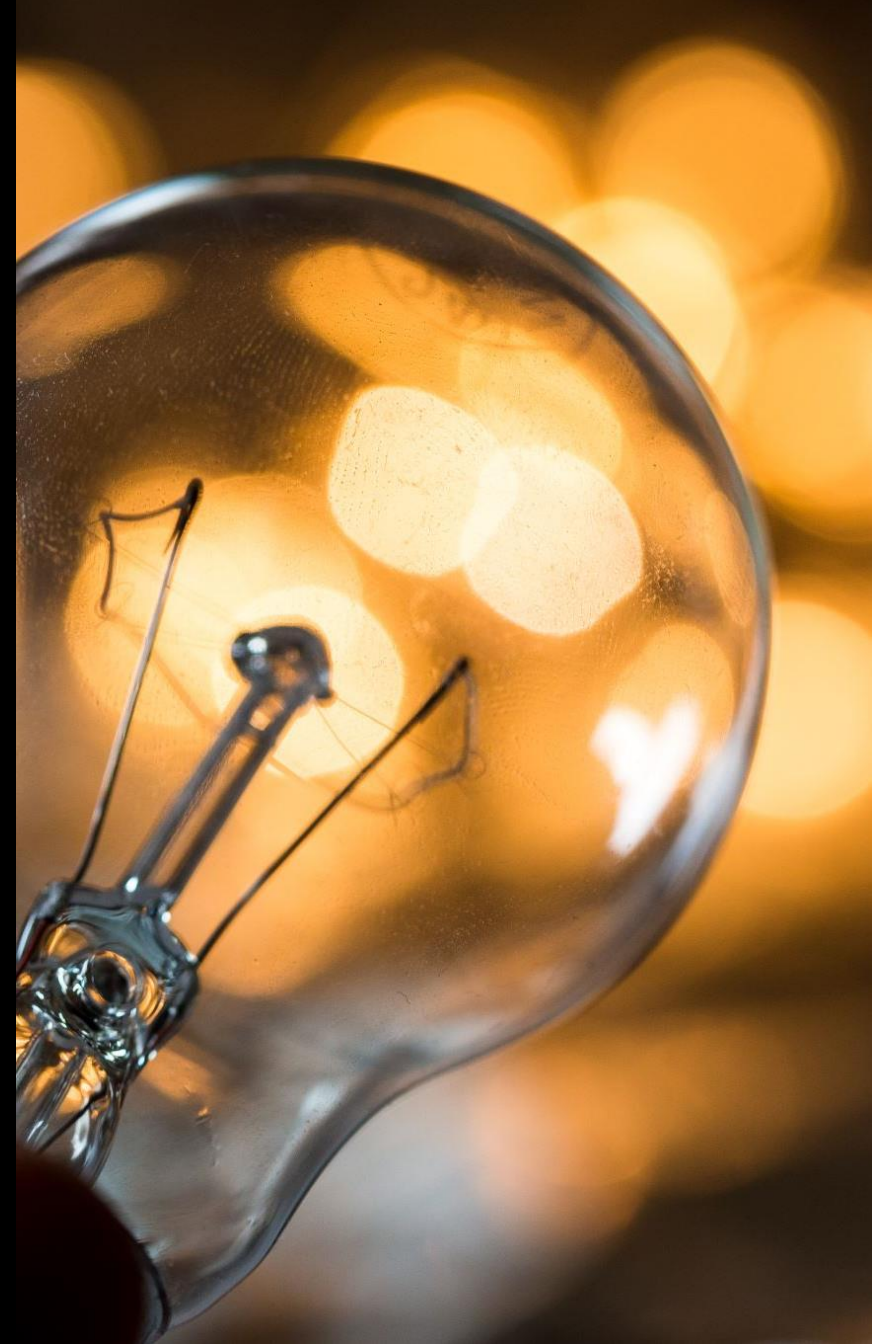
Inadequate Workstation Design

- Poorly designed workstations, including improper chair ergonomics, lack of adjustability, and poorly positioned monitors or keyboards, can contribute to discomfort and musculoskeletal strain. Incorrect positioning of equipment can lead to awkward postures and increased risk of injuries



Environmental Factors

- Factors such as inadequate lighting, noise, vibration, and temperature extremes can also impact the ergonomic well-being of healthcare workers. Poor lighting can cause eye strain and affect visibility, while excessive noise and vibration can contribute to stress and fatigue



Effects of Poor Ergonomics

Poor ergonomics can have several adverse effects on healthcare workers, including:

Musculoskeletal disorders (MSDs) such as back pain, neck strain, and repetitive strain injuries

Decreased productivity and job satisfaction

Increased absenteeism and healthcare costs

Higher risk of errors and compromised patient care



Disease due to poor physical ergonomics

- Carpal tunnel syndrome
- Work-Related Fatigue
- Tendinitis
- Low Back Pain
- Neck and Shoulder Pain
- Rotator cuff injuries

CHALLENGES IN THE IMPLEMENTATION OF ERGONOMICS

Resistance to Change

Lack of Awareness and Education

Limited Resources and Support

High Workload and Time Pressure

Sustaining Ergonomic Practices

Organizational Culture and Priorities

Benefits of Ergonomics in Healthcare



Reduced risk of work-related injuries and MSDs



Improved worker safety and well-being



Enhanced productivity and efficiency



Increased job satisfaction and employee retention

Ergonomic Assessments

Conducting ergonomic assessments in healthcare workplaces is crucial for identifying and addressing ergonomic issues. The process involves:

- Identifying high-risk tasks and workstations
- Assessing worker postures, movements, and work organization
- Collecting feedback from healthcare workers
- Using assessment tools and checklists



Risk assessment form



BORANG PERAKUAN TUGASAN TEMPAT KERJA *WORKPLACE ASSIGNMENT DECLARATION FORM*

Adalah saya dengan ini mengaku bahawa Tugas Tempat Kerja ini yang disediakan untuk **Peperiksaan Orang Terlatih Ergonomik Bagi Penilaian Risiko Ergonomik Awal** adalah berdasarkan hasil kerja asal saya sendiri dan maklumat diperolehi hasil lawatan tapak ke tempat kerja saya yang berkenaan kecuali sedutan atau petikan yang dinyatakan.

Sekiranya maklumat yang dinyatakan tidak benar, pihak Jawatankuasa Pembangunan Modul dan Peperiksaan – Kesihatan Pekerjaan di bawah Jawatankuasa Peperiksaan NIOSH berhak membatalkan Tugas Tempat Kerja ini.

I hereby certify that this Workplace Assignment prepared for the Ergonomics Trained Person For Initial Ergonomics Risk Assessment Examination is based on my original work and information's are gathered from the site visit except for citation and quotation made.

If the information stated is not true, the Module Development and Examination Committee – Occupational Health under NIOSH Examination Committee reserves the rights to cancel this Workplace Assignment.

Tandatangan / Signature :

Nama / Name :

No. MyKad / MyKad No. :

Tarikh / Date :

PENGESAHAN SYARIKAT / COMPANY VERIFICATION

Saya mengesahkan penama seperti di atas telah menjalankan tugas tempat kerja di premis ini :
I confirm the above named person has conducted the workplace assignment at this premises :

Tandatangan / Signature :

Nama / Name :

Jawatan & Jabatan
Position & Department :

No. Tel. (Pej./Bimbit)
Tel. No (Off./Handphone) :

Tarikh / Date :

6/6/2023

Cop rasmi syarikat
Company official stamp



Ergonomic Risk Assessment


1. **Scope:** ergonomic risk assessment typically provides a broad overview of the work environment and identifies general ergonomic hazards. It focuses on identifying common risk factors and high-level observations.
2. **Purpose:** The purpose of the assessment is to raise awareness about ergonomic risks and initiate basic interventions to address immediate concerns.
3. **Data Collection:** The assessment involves gathering information through observations, basic measurements, and worker interviews. It may utilize simple checklists or questionnaires to identify common ergonomic issues.
4. **Intervention:** Based on the assessment, basic ergonomic interventions are implemented, such as awareness campaigns, training programs, and simple modifications to workstations or equipment.

Assessment form

Appendix 1: SELF ASSESSMENT MUSCULOSKELETAL PAIN / DISCOMFORT SURVEY FORM (Refer to Part 2.1)

Instruction:

1. Tick (✓) on any body parts (Column A) if you feel discomfort/pain during your work in the last 12 months
2. For those body parts you were feeling pain/discomfort, tick (✓) (Column B) if in your opinion, the pain is due to your work.



Body Parts	A I have pain/ discomfort in the following body parts.		B I think the pain/ discomfort comes from work.	
	L	R	L	R
Neck				
Shoulder				
Upper back				
Upper arm	L	R	L	R
Elbow	L	R	L	R
Lower arm	L	R	L	R
Wrist	L	R	L	R
Hand	L	R	L	R
Lower back				
Thigh	L	R	L	R
Knee	L	R	L	R
Calf	L	R	L	R
Ankle	L	R	L	R
Feet	L	R	L	R

Name: _____ Staff ID No.: _____
 Department: _____ Job tasks: _____
 Contact No.: _____ Email: _____
 Date: _____

Risk factors	Total Score	Minimum requirement for advanced assessment	Result of Initial ERA	Any Pain or Discomfort due to risk factors as found in Musculoskeletal Assessment (refer Part 3.1) (Yes/No)	Need Advanced ERA? (Yes/No)																										
Awkward Postures	3	≥ 6		YES / NO																											
Static and Sustained Work Posture	3	≥ 1		<i>If YES, please tick (✓) which part of the body</i> <table border="1"> <tr><td>Neck</td><td></td></tr> <tr><td>Shoulder</td><td></td></tr> <tr><td>Upper back</td><td></td></tr> <tr><td>Upper arm</td><td></td></tr> <tr><td>Lower back</td><td></td></tr> <tr><td>Forearm</td><td></td></tr> <tr><td>Wrist</td><td></td></tr> <tr><td>Hand</td><td></td></tr> <tr><td>Hip/buttocks</td><td></td></tr> <tr><td>Thigh</td><td></td></tr> <tr><td>Knee</td><td></td></tr> <tr><td>Lower leg</td><td></td></tr> <tr><td>Feet</td><td></td></tr> </table>	Neck		Shoulder		Upper back		Upper arm		Lower back		Forearm		Wrist		Hand		Hip/buttocks		Thigh		Knee		Lower leg		Feet		
Neck																															
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Hip/buttocks																															
Thigh																															
Knee																															
Lower leg																															
Feet																															
Forceful Exertion	1	1																													
Repetitive Motion	5	≥ 1																													
Vibration	4	≥ 1																													
Lighting	1	1																													
Temperature	1	1																													
Ventilation	1	1																													
Noise	2	≥ 1																													



Ergonomic Solutions



Lifting and Transferring Techniques

Proper lifting and transferring techniques can help prevent injuries. Key considerations include:

- Using assistive devices like patient lifts and transfer belts
- **Encouraging teamwork and proper communication during transfers**
- Educating healthcare workers on body mechanics and safe patient handling practices



Workstation Design

Ergonomic workstation design is crucial for healthcare workers. Considerations include:

- Adjustable furniture to accommodate different body sizes and tasks
- Proper lighting and task-specific lighting solutions
- Correct positioning of monitors, keyboards, and mouse
- Adequate storage solutions for supplies and equipment

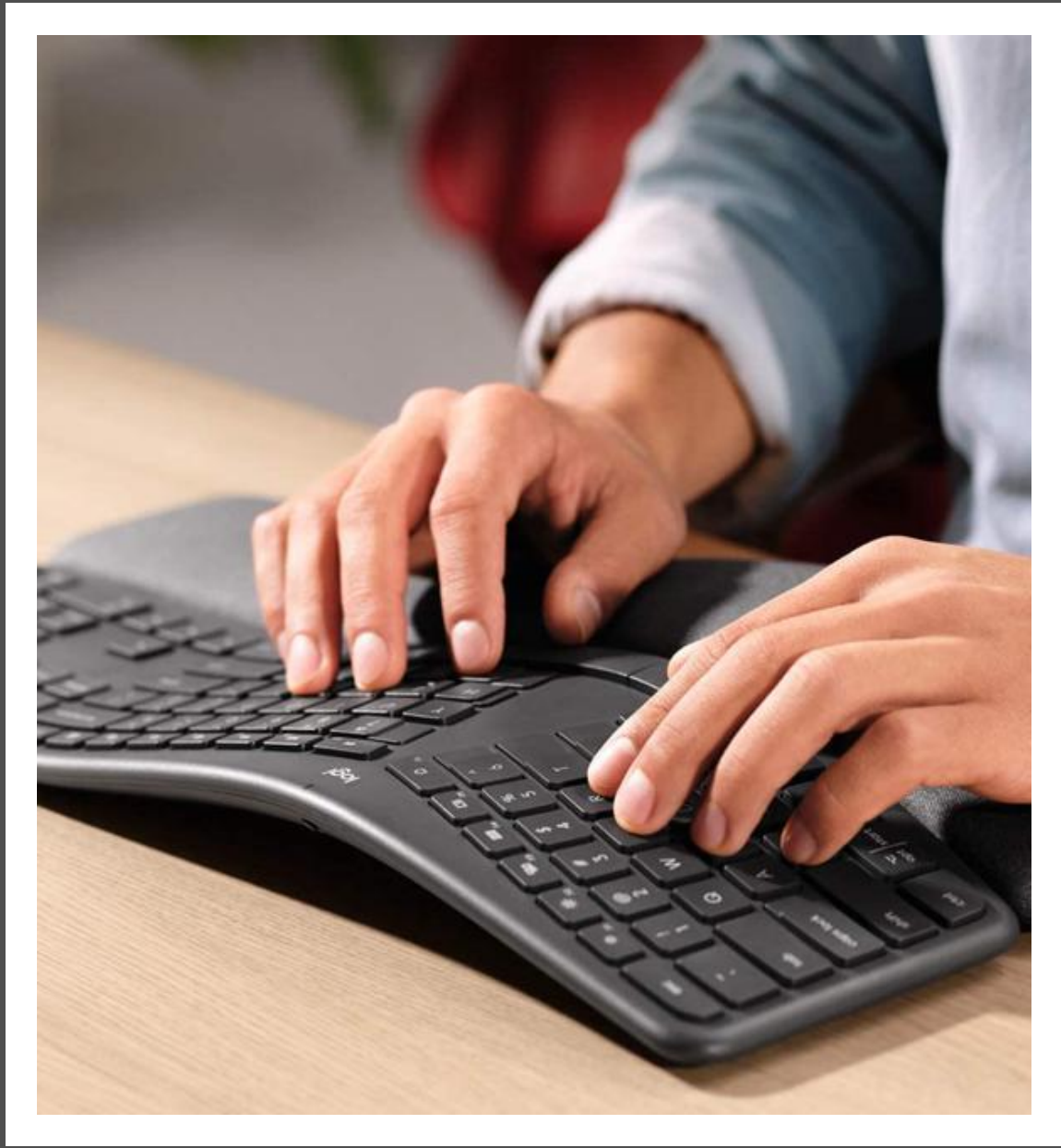


Equipment and Tools

Ergonomic equipment and tools can enhance healthcare worker safety and comfort. Examples include:

Adjustable patient beds and chairs

- Ergonomic instruments and tools with comfortable grips
- Lift-assist devices for heavy loads





Training and Education

Training healthcare workers on ergonomics and proper body mechanics is essential. Key aspects include:

- Providing comprehensive ergonomics training during orientation
- Conducting regular refresher courses and workshops
- Educating staff on self-care techniques, stretching exercises, and ergonomics awareness



Employee Engagement and Participation

Involving healthcare workers in the ergonomic process is vital. Strategies include:

- Encouraging open communication and feedback
- Establishing an ergonomic committee or task force
- Involving workers in the selection and evaluation of ergonomic solutions



Monitoring and Evaluation

Ongoing monitoring and evaluation of ergonomic interventions ensure their effectiveness. Key steps include:

- Regular assessments of ergonomic practices and equipment
- Collecting feedback from healthcare workers
- Making necessary adjustments and improvements based on evaluations

Case study

- ABC Hospital, a large healthcare facility in Malaysia, faced a significant issue of musculoskeletal injuries among its nursing staff. These injuries were primarily attributed to improper patient handling techniques, resulting in increased absenteeism, reduced worker morale, and rising healthcare costs. The hospital recognized the need to address these ergonomic concerns and implemented a comprehensive ergonomic program



Identified Issue

The hospital identified that manual patient lifting, and transfers were causing musculoskeletal injuries among the nursing staff. The high physical demands of the job, coupled with inadequate equipment and training, resulted in a significant number of injuries and increased healthcare costs for the organization.



Steps taken ?

- Ergonomic Assessment
- Training and Education
- Implementation of Assistive Devices
- Workflow Redesign
- Continuous Monitoring and Feedback

Implications ?



REDUCED HEALTHCARE
COSTS



DECREASED
ABSENTEEISM



IMPROVED STAFF
RETENTION

Conclusion

- It is crucial for healthcare organizations in Malaysia to prioritize and invest in ergonomics, considering the positive impact on healthcare worker retention, recruitment, and the overall reputation of the organization.
- By creating ergonomically sound work environments and providing necessary training and support, healthcare organizations can create a culture that values the well-being of healthcare workers and ultimately improves the quality of patient care.





QUIZ

It's not the end



Thank you

