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Work From Home (WFH) During Pandemic of Covid-19: Occupational Health Risks, Strategies and Control Measures

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Abstract

The unprecedented event of Covid-19 pandemic has caused great damage and loss of millions of lives throughout the world and be taken as current emerging crisis of the worldwide as it gives rise to negative consequences towards safety, health, environmental and economic aspects. Due to the lockdown in most countries, the pandemic of Covid-19 has also brought radical changes in the world of work as the employees are encouraged to Work-from-Home (WFH) if applicable in order to ensure business continuity. Since WFH is a new norm in Malaysia, its occupational health potential hazards and risks are still unclear and unknown among employers and employees in organizations. This paper is written to identify potential occupational health hazards and risks as well as to suggest and recommend appropriate interventions and counter measures to manage WFH potential health hazards and risks. Online research journals, online newsletters and documents are reviewed from various platforms (i.e. research gate and science direct), on WFH in Covid-19 pandemic and WFH's occupational health hazards, risks and occupational interventions. The findings have stated ergonomics and psychological are two potential occupational health risk factors and risks in WFH. Employers are encouraged to implement WFH risk management intervention on ergonomics and psychological risks to ensure employees in Malaysia are protected from WFH health risks during the Covid-19 pandemic.

Keywords: - Covid-19, work from home (WFH), occupational health hazard and risks

1. Introduction

On 11th of March, World Health Organization (WHO) has considered the outbreak of Coronavirus (Covid-19) as pandemic when the whole world is affected by newly discovered biological hazards of Covid-19 which give great threat to the health of all human-beings around the world. The unprecedented event of Covid-19 pandemic has caused great damage and loss of millions of lives throughout the world and be taken as current emerging crisis of the worldwide as it gives rise to negative consequences towards safety, health, environmental and economic aspects.

Due to the lockdown in most countries, the pandemic of Covid-19 has also brought radical changes in the world of work as the employees are encouraged to Work-from-Home (WFH) if applicable in order to ensure business continuity. In Malaysia, the first detection of Covid-19 is from Chinese travelers in Johor Bahru with relatively low case (Nikita, 2020) and drastically increased during Sabah election (Rashvinjeet, 2020). Thus, the announcement of lockdown by Malaysia Government on 16 March 2020 cause all organizations to shut their business temporarily. Many interventions have been done by Malaysia Government ever since including WFH. In 2021, the implementation of WFH is no longer an option but a must for economic continuity in pandemic.

In Malaysia, WFH is considered as hot topic among Malaysian researchers due to its new implementation by Malaysia Government. The readiness of organizations in Malaysia to continue WFH during post-Covid-19 is still under investigated by researchers. During the WFH implementation, the responsible of employers towards employees' safety, health and welfare as stated in Occupational Safety and Health Act (OSHA) 1994 is still intact and enforced by Department of Occupational Safety and Health (DOSH). At the same time, all organizations are expected to follow all Standard Operation Procedure (SOP) by KKM during Covid-19 pandemic.

Since WFH is a new norm in Malaysia, its occupational health potential hazards and risks are still unclear among employers and employees in organizations. Thus, it is very effective to identify and manage occupational health potential hazards and risks in the beginning of WFH implementation as the top priority to avoid negative impact of WFH towards employees' health later on. Referring to past research, there are considerable emerging and epidemiological data on psychological hazards (e.g. stress, depressions, loneliness and irritability) and ergonomics hazards (e.g. awkward postures, repetitive movement, long duration of sitting) which are related to WFH. These potential hazards should be controlled by suitable strategies and control measures to prevent further occupational health

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risks towards employers and employees during WFH.

Previous researches have discussed on wide scales of strategies and interventions as well as control measures to manage occupational health potential hazards and risks during WFH in order to reduce the adverse impacts on safety, health towards employers and employees of the organizations (Jessica, 2020 and Pyoria, 2011). The exploration occupational safety services and work health prevention and promotion programs can give rise to positive impact of WFH towards employers and employees of the organizations. Safe and healthy employees during WFH can increase the chances to increase high productivity and business continuity to remain competitive in the fierce and challenging market places and business world.

In this paper, the arguments on occupational health hazards and risks as well as strategies and control measures will cover on WFH scopes. All arguments are based on the reviews from research journals, online documents as well as online news respective to the topic. This paper is written to compile occupational health hazards and risks as well as the control measures to manage the available occupational health risks in order to ensure the well-being of the employers and employees during WFH.

1.1 Problem Statement

WFH order is authorized by Malaysia Government as drastic health control measures to curb in Covid-19 pandemic in response to many clusters of Covid-19 have been affected many workplaces in Malaysia. Director General of KKM has stated that 62 (30%) clusters are related to workplace (Fareez, 2020). The number of employees infected by Covid-19 has increased tremendously. For early workplace cases, the highest number of employees is from cluster Teratai (n = 4, 036 persons) and follows by cluster Tapak Binaan Damanlela (n = 1,539) and cluster Cergas (n = 1,337). Due to this worrying numbers, Malaysian Government has instructed WFH order. Little clarification provided during the announcement has caused considerable confusion to the public (Donovan and Ho, 2020).

Besides the confusion of the employees, the real problem regarding of WFH is the unclear SOP implementations, employers' responsibilities and the potential occupational health hazards and risks. Currently, there is unavailable of SOP during WFH by DOSH. Therefore, employers arrange their employees blindly without clear SOP by authorities. Due to above problem statements, suggestions on strategies, interventions and counter measures to cater employers' responsibilities, employees' needs and potential occupational health hazards and risks

can help the employers to manage employees' arrangements and engagements during WFH to ensure the safety, health and welfare of the employees at home doing work.

1.2 Objectives

This paper is written to investigate the awareness of PPE compliance among shipyard workers. The specific objectives are:

i.   To review literature on WFH.
ii. To identify occupational health hazards and risks in WFH.
iii. To suggest and recommend strategies and control measures to manage WFH's occupational health hazards and risks.

2. Literature Review

WFH is currently become the new norm for all workers in Malaysia. Since most of the organizations are unfamiliar with WFH, it is very challenging for the employers and employees to WFH effectively (Diyana, 2020 and Shareena and Muhammad, 2020). The term of WFH is interchanged with telework, telecommuting and remote work as it is somehow similar with some differences (Becca, 2020 and Scott, 2020). Many previous researches have been done by researchers regarding WFH during Covid-19 on guidelines and case studies (Chin et al., 2013), perception and experiences (Shareena and Muhammad, 2020) , impact on long commutes (David, 2020; Vos et al., 2019), outcomes (Nakrošienė et al., 2019), benefits on work-life-balance (David, 2020), factors (Chin et al., 2020 and Nakrošienė et al., 2019), challenges (David, 2020), ergonomics risks (Davis et al., 2020), psychological stress (Mann and Holdsworth, 2003 and Tavares, 2017) health problems (Mann and Holdsworth, 2003) and strategies Jessica, 2020 and Lane et al., 2020). It is shown that the interest of researchers towards WFH is growing in numbers. According to research database at above, it is shown that various aspects on WFH are already been investigated.

2.1 WFH: Ergonomic Risk Factors

Interaction between employees' activities and WFH is also associated with environment. Due to the interaction, employees' bodies physiological, psychological and cognitive changes. In conjunction to that, health can have effect in positive and negative manners on WFH and vice versa as in Figure 1.
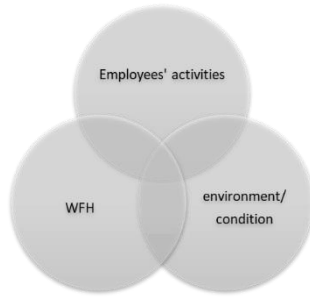
Figure 1: Interaction between employees' activities, WFH and environment

Referring to past studies, WFH has been studied in context of occupational health hazards (i.e. ergonomics hazards and psychological hazards). Ergonomic hazards are also called ergonomic risk factors in the past researches. Potential ergonomics risk factors may come from the critical components of work station (i.e. chair, desk, input devices and monitor) (Davis, 2020). WFH involves basic office activities such as sitting in front of a computer and operating it by means of typing or moving a mouse.

These harmless activities can set the stage for injuries that can develop over time. Even though these activities are not particularly hazardous for a worker who does them only occasionally, but the situation becomes more critical when done long periods every working day. Usually, work-related factors that present in the basic office activities are fixed and constrained postures that are frequently awkward, uncomfortable and maintained for too long a time, repetitious and forceful hand movements and a high pace of work. All these human activities are connected to musculoskeletal injuries (MSIs), and specifically, repetitive motion injuries (RMIs).

In a past research among university workers on WFH and ergonomic risk factors, 58% of respondents are sat on any chairs with the wrong height (too low (41%), too high (2%). The wrong chairs will result in awkward postures (i.e. elevated arms, leaning on front edge, and poor head position) Many respondents don't have proper support of their backs (73%). In addition, external monitors (i.e. laptop, laptop and external monitors, multiple externals) are set up too low (53%) and too high (4%) cause the employees to twist their necks or backs. Most of the respondents have used laptops as their monitor in the wrong position of the eye sights (too low or too high) [30]. Using of repetitive moves of mouse (i.e. frequent clicking and rolling with fingers) can also give rise to contact stress. Therefore, ramification of work station and equipment for employees during WFH will likely cause the likelihood of health risks among employees when WFH.

2.2 WFH: Physiological Risk Factors

According to Yerkes-Dodson Law (Figure 2), not all stress is bad for the health of employees. The Model of Yerkes-Dodson stress performance curve is suggested relationship between task performances and stress. Too much stress will decrease performances at work.

Psychological risk factors and WFH (i.e. stress) have been scholarly discussed in the literatures. Psychological risk factors are less easy to predict and difficult to control. Frequent discussion of risk factor among researchers are the employees can feel emotionally isolated, irritability and loneliness due to WFH as limited social interaction while working (Tavares, 2017). During WFH, non-assessment on job-related risks with the physiological and psychological of the employees may lead to health risk to employees in short and long-term run.
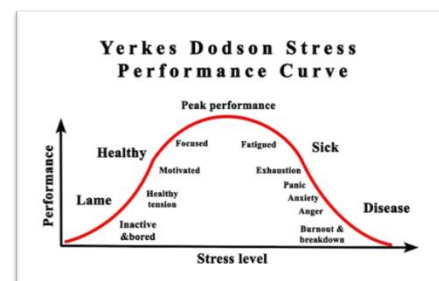

Figure 2: Model of Yerkes-Dodson stress performance curve

In addition to physical symptoms, psychological stress of employee during WFH can also be assessed. It can be perceived when the employees have feelings like anger, boredom, frustration, depression, discouragement, disillusionment, anxiety, suspicious, irritability and hopeless. Since WFH has been introduced as future work method instead of conventional office work scheduled, considerable of literatures are published on WFH strategies, interventions and control measures to manage health risks of WFH.

3. Methodology

As internet of things are very current nowadays due to forth Industrial Revolution, by browsing through online news, research journals, documents, social media and blogs, the keyword search by "work from home", "telework", "telecommuting", "remote work", "Covid-19", "health risks", "ergonomics", "psychological stress". Many online news, electronic journals related to WFH, telework and telecommuting, psychological stress and ergonomics were popped up. It has shown that the WFH, teleworks, remote works, telecommuting, psychological stress and ergonomics are very current and need to be explored. These keywords are

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searched to address WFH, its health risks and strategies to address WFH' health risks. Figure 3 shows the flow chart to construct the paper.

The research design for the paper is aimed to explore on WFH and its Occupational Health (OH) hazards and risk as well as interventions to risk management in WFH. By reviewing online research journals from various platforms (i.e. research gate and science direct), online newsletters on disasters, online document on WFH in Covid-19 pandemic and WFH's OH hazards, risks and OH interventions are extracted from all the respective documents. This written paper is limited to the information gained from searched journals, news and documents only.

The information is reviewed and collected from previous researches journals, online newsletters, blogs and online documents to explore on the WFH and OH hazards and risk as well as OH interventions in risk management in WFH. The interventions depend on the hazards and risks that the respective WFH. These WFH interventions will be discussed specifically on ergonomics and psychological risks in WFH.
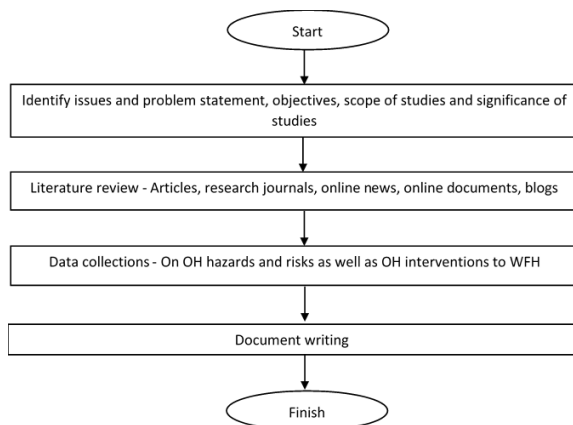

Figure 3: Flow chart

4. Results and Discussion

There are two potential occupational health risk factors have been identified that are related to WFH which are explained in Table 1, as follows; ergonomics risk factor, psychological risk factors (Davis et al., 2020; De Macêdo et al.,2020; Mann and Holdsworth, 2003; Robertson and Mosier, 2020 and Tavares, 2017). All potential risk factors should be managed by employers and employees in shared responsibility. In order to ensure WFH is safe for employees' health. Poor management of these potential occupational health risk factors may lead to undesired occupational health risks.

Work-related factors that present in the basic office activities are fixed and constrained postures that are frequently awkward, uncomfortable and

maintained for too long a time, repetitious and forceful hand movements and a high pace of work. All these human activities are connected to musculoskeletal injuries (MSIs). Besides ergonomics risks, psychological risk factors are less easy to predict and difficult to control. Frequent discussion of risk factor among researchers are the employees can feel emotionally isolated, irritability and loneliness due to WFH as limited social interaction while working.

Table 1: Potential Occupational Health Risk Factors Related to WFH.

Ergonomics Risk Factors	Psychological Risk Factors
Repetitive moves (e.g. clicking scrolling mouse)	Emotional stress (e.g. anxious, frustrated, impatient, irritable, isolation, loneliness)
Awkward postures (e.g. elevated arms, learning forward to front edge, poor head position)	Cognitive stress (e.g. overwork, tight work datelines, excessive pressure and long work hours)
Contact stress (Hard edge of tables)	Job Strain (e.g. lack of control, working at high speed, excessive bureaucracy)
Static postures (long hours of sitting)	Lack of job-related supports (e.g. poor communication and feedbacks)

Occupational health risks are stated in the Table 2 can be detrimental towards the employees even they are undergoing WFH are originated from occupational health risk factors at above (Tavares, 2017). Ergonomic risks are usually is linked with the MSDs. MSDs are injuries or disorders that affect human body especially on movement, musculoskeletal system, nervous system and soft tissues (i.e. muscles, tendons, ligaments and cartilages). MSDs can happen when employer fail to fit the job to the workers and vice versa such as incorrect postures of the workers and lack of tools make it worst for the postures of the workers during working. In addition, the nature of WFH means that employees are working in isolation with less social work relationship. Without adequate social interaction, employees can induce feelings of isolation and loneliness. In a worst-case scenario, the employees may develop depression and anxiety disorder. In addition, unrelieved work stress of the employees due to organizational factors may lead to exhaustion or burn-out. Burn-out employees are required high degree of involvement from psychological experts such as psychologists to be resolved.

Table 2: Occupational Health Risk to WFH.

Ergonomics Risks	Psychological Risks
Musculoskeletal disorders; Shoulder disorder, arm disorder, upper arm disorder, lower back disorder, back disorder	Depression, anxiety disorder, occupational burnout, insomnia, burnouts
Neurovascular disorder (e.g. carpel tunnel syndrome using excessive mouse clicking and rolling)	

In this paper, WFH risk management interventions is discussed specifically on ergonomics and psychological risks. Ergonomics risks can be solved by shared responsible between employers and employees. The best way to find the correct ergonomics interventions is by using hierarchy of control in Figure 4. Hierarchy of control means the established priority order for the types of measures to be used to control risks as the top level of inverted pyramid is most effectives as compared to at the bottom level.
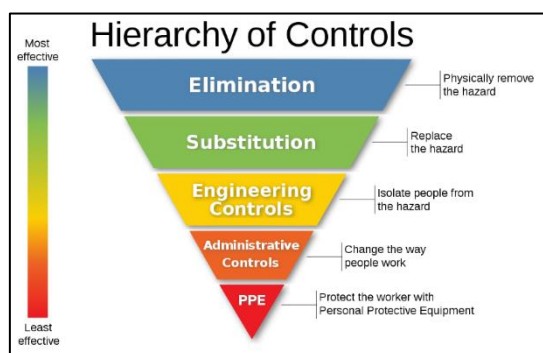

Figure 4: Hierarchy of control

Discussion about ergonomics risks' interventions between top management, ergonomics experts, engineering experts and end-users is the best solutions. The reasonable compromise is depending on employers' capabilities and capacities to accommodate changes to ensure health of employees during WFH. Table 3 shows the ergonomics interventions using hierarchy of controls.

Table 3: Ergonomics Interventions by Hierarchy of Control.

No	Hierarchy of control	Ergonomic intervention
1	Elimination	Improve lighting and floor safety
2	Substitution	Redesign work station
3	Administrative	Buy ergonomics equipment
4	PPE	Soft Padding

For psychological risks, the risk management can be done by organizational and individual strategies. Table 4 will show organization strategies on psychological risk management.

Table 4: Psychological Risk Management by Organization Strategies.

No	Strategies	Methods
1	Assessing job satisfaction	Interview Questionnaires
2	Job enrichment programs	Direct feedback New learning
3	Improve quality of work	Task performed Reward structure
4	Organization development program	Increase open confrontation

There are four strategies that can be done by employers to promote health among WFH employees. At first, assessing their job satisfaction can be crucial to determine their happiness level during work by conducting surveys among WFH employees. Besides, job enrichment can reduce the psychological risk for WFH employees as they are eligible to give direct feedbacks on their experiences through WFH. Employers should also improve their employees' quality of work by increase the level of support, positive reinforcement by providing enough resources for WFH including rewards incentives, financial aid for utilities expenses. Lastly, employers should increase open confrontation and genuine interpersonal communication with employees to ease employees' problem during WFH.

5. Conclusion

The pandemic of Covid-19 has caused massive chaos and negative impacts towards the people, environment as well as economic and business losses due to after-effects of the crisis. It is shown that after-effects losses from the crisis can be reduced by effective WFH that help to curb the Covid-19 and business continuity. Malaysia Government has shown tremendous efforts to recover from Covid-19 pandemic by WFH order to reduce the number of positive Covid-19 cases. The establishment of effective WFH will aid to lessen the negative impacts for the employees and environment as well as frontline workers' risks and pressures.

Due to Covid-19 pandemic, organizations in Malaysia can experience new method of work such as WFH. WFH has shown to give positive advantages as compared to its disadvantages but the other important crucial aspects to be looked into are its negative impacts on employees' health due to occupational risk factors of WFH. In this document, main WFH issues are from ergonomics and psychological risk factors. By taking advantages from previous case studies on their WFH

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advancements, the effectiveness of WFH can be achieved towards the reduction of after-effects losses from the crisis in line with business continuity. Therefore, employers are encouraged to have effective risk implementation in WFH by making use effective strategies, interventions and control measures from literatures to ensure employees in Malaysia are protected from WFH health risks.

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