



ASSESSMENT OF OCCUPATIONAL HAZARD AND INJURY RISKS IN THE HOTEL INDUSTRY: FOCUSING ON FOODSERVICES PERSONNEL IN SABAH, MALAYSIA

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Abstract

This study aims to determine the risks for physical, chemical, biological and psychosocial hazard that are related to occupational health and safety as well as to determine the type of injury occur mostly among foodservice employee. Questionnaire was distributed to 128 foodservice workers of 4-5 stars hotels in Kota Kinabalu, Sabah. Result found that psychosocial hazard (3.29±.96) was more likely to occur whereas chemical hazard (4.13±.74) was less likely to occur. ANOVA analysis showed physical and psychosocial hazard have significant difference ($p \leq 0.05$). The post hoc test (Scheffé) shows only chemical and biological hazard have equal mean of hazard. For the type of injury, emotional stress occur the most (3.63±1.15) whereas electrocution occur the least (1.37±.64). Independent T-test indicated that burns ($P \leq 0.05$), cuts and laceration ($P \leq 0.05$) and dermatitis ($P \leq 0.05$) showed significance difference in term of occurrence frequency between kitchen and service workers. As conclusion, attention should be given to the physical and psychosocial hazards and injury associated with it as it shows a higher risk of occurrences.

Keywords: Occupational hazard, occupational injury, foodservice industry and hotel industry.

Introduction

Safety and health in work are a worldwide priority issue, based on the International Labor Organization (2017) [1] every 15 seconds, there is a worker who dies due to a work-related accident or illness and there are about 153 workers suffering work-related accidents. Every day, there are 6,300 people who die from job-related accidents or illnesses, more than 2.3 million deaths per year. Globally, 317 million accidents occur at work every year and most of these accidents cause long absence from work. Foodservice industry has many potential hazards that can cause various kinds of health and safety hazards that may lead to occupational related injury. It also has an impact on financial burden through medical expenses related to it. Due to the nature of the foodservice industry has cause exposure to occupational hazard such as physical, chemical, biological and psychosocial hazard (WISB, 2010) [2]. Occupational injury in hotel and restaurant sectors has increased in numbers of cases from 15 cases in 2012 to 90 cases in 2016 (JKKP, 2017) [3]. Objectives of the research is (1) to determine the level of risks for physical, chemical, biological and psychosocial hazard that are related to occupational health and safety and (2) to determine the type of injury that mostly occur among foodservice employee.

Literature review

Occupational hazard

Hazard is a potential source of injury or damage to human health, property or environment. Furthermore, many health and safety issues will also begin to develop slowly due to exposure to the hazards (Lynde, C, 2008) [4]. If there is a safety and health problem in an organization, it will lead to an increase in the absence due to sickness, high level of staff turnover, retraining of staff and further increase compensation cost for workers (Martinelli, 2017) [5]. In addition, hazards will also create a bad working environment within the organization and employees around the workplace can risk from exposure to health and safety hazards. In the food service environment, management and employees face various types of hazards in the kitchen such as



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an open flame, high pressure steam release, and sharp knife, hot fluid and wet and slippery floor. Additionally, workers need to lift heavy objects and trays and move relatively quickly while working (U.S Department of Labor, 2000) [6].

Physical hazard

WSIB (2010) [7] stated physical hazards include machinery and equipment, noise, temperature, vibration and radiation. Machinery and equipment may consist of heavy machinery to small scale equipment. Mechanisms found in machinery and equipment such as rollers has the risk of injury or amputation of the body parts. In addition, noise is also one of the physical hazards and could become a hazard if the strength and intensity of the sound are high enough to cause a hearing loss. Noise is also an undesirable sound, as it can interfere with communication at work, which can lead to injury, excessive or prolonged noise levels can damage the ear's nerve which may result in temporary or permanent hearing loss. For example, the noise from the food preparation area especially from the blender and the appliance that produce high intensity noise, and from the touch of metal equipment between stainless steel saucers, pans and metal shelves (U.S Department of Labor, 2002)[6].

Chemical hazard

Based on U. S Department of Labor (2002) [6], chemical hazards are categorized into three types, toxic, flammable and corrosive. Toxic chemical hazards are chemicals that expose a person to toxic absorption via skin, air inhalation, or blood vessels that may cause illness or death. The amount of chemical exposure is significant in determining the harmful effects on human health. Additionally, flammable chemicals are defined as chemicals exposed to heat-ignition sources such as oxygen can cause explosion (US DOSH, 2004) [8].

Workers working in the hotel industry, restaurants and food services will be exposed to hazardous chemicals such as floor detergents, soap and disinfectants. If workers are in contact with cleaning agents and disinfectants for a long time, workers are more likely to have skin allergies (Elsner, 2008) [9]. In addition, workers who are involved in long-term washing will more likely developing dermatitis which is a type of skin disease. According to the Ministry of Manpower Singapore (MOM) (2003) [10] most chemicals are used for cleaning purposes in the hotel industry may cause corrosive, irritant, toxic, flammable and carcinogenic.

Biological hazard

Kitchen workers are vulnerable to biological hazards, particularly in food storage and handling processes and waste food and waste handling, this is because bio-hazard risks can occur through organic matter such as blood or liquids flowing from food waste. Additionally, cleaners and stewards working in humid conditions where high concentrations of water vapor are also at risk of hazardous damage if the maintenance of the ventilation system is not regularly performed and the cleanliness of the workplace is not properly maintained (EU-OSHA, 2005) [11].

Hand washing practice before handling food is very important to prevent from spreading bacteria (Frewer & Trijp, 2006) [12]. Canadian Center for Occupational Health and Safety (2005) [13] stated that dirty hands are a major source of bacterial transmissions from sources of contamination to food, and cause bacterial propagation. Food contamination can occur when a person's contaminated hands touching the food directly during food preparation. Hand washing practices should be done regularly before or after handling food, after visiting toilet and handling garbage to keep hands clean and free from bacteria that can cause infection (Redman, 2007) [14]. Proper hand washing is one of the effective measures to reduce bacterial transmission and the risk of contamination of food in the kitchen (Frewer & Trijp, 2006) [12].

Psychological hazard

Based on Cox & Griffith (2005) [15], there are ten types of work stress characteristics, divided into two categories, namely work content and working context. For categories of job content, it refers to psychosocial hazards associated with working conditions and work organization. The amount of work to be done and the work difficulty level are related to stress (ILO, 2017) [16]. Among the features of working pressure in the category include work environment and equipment, work design, workload and work schedule. For example, a



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non-conductive working environment, including workplace layouts and exposure to hazardous agents, can affect their physical and psychological health. Additionally, the work design covers several hazardous aspects such as repetition of the same work, insufficient resources and lack of opportunity to learn. Heavy workload and long working duration also contribute to increased pressure and fatigue levels (Tennant, 2001) [17].

Kuslivan (2003) [18] found that workers in the kitchen area had the highest level of stress compared to other jobs in the hotel. This is because they are exposed to the hot and humid conditions over a long period of time and the noise generated from cooking equipment, this will lead to discomfort, a cleaner or steward worker need to work in a hot, damp and noisy environment (Prole, 2010) [19]. Work pressure may occur at work due to exposure to such extreme environments will directly affect employee productivity and performance and increase the risk of work injury (WSIB, 2010) [7].

Occupational injuries

Occupational injuries are any injuries, illnesses or deaths caused by accidents occurring during working hours, injury is related to employment if the event occurs when the individual works at the employer's premises, or works outside the employer's premises with the employee's status (JKKP, 2008) [20]. Based on the latest statistics obtained from JKKP the number of deaths from work related injury occurring in Malaysia has increased from 214 victims in 2015 to 240 victims in 2016. Accidents that occur during work will result in permanent or temporary disability and death. The term permanent disability means the type of individual defect that is expected to be no longer recovered and still remains after the employee has achieved maximum healing. For example, loss of limbs such as eyes legs or hands. The term temporary disability is a type of disability that only affects individuals for a short period of time which last for a few days to several months, however, the injured person will recovered (JKKP, 2017) [21].

Methodology/ material & methods

Research method & instrumentation

This study is a quantitative research and the study was conducted using a survey form. The study gathers information or data on hazards, types of occupational injuries through questionnaires and interpreting data using statistical analysis (SPSS). Questionnaire forms are instruments used to obtain data and information related to occupational hazard and injuries among food service workers.

Location of study

This study was conducted at hotels located around Kota Kinabalu City. Based on statistics made by the Sabah Tourism Board (2017), there are 192 hotels in the vicinity of Kota Kinabalu City. Hotels in Malaysia are rated according to a star rating system designed by the Ministry of Tourism and Culture. The system scores from one to ten points based on six different criteria to determine the star rating of the hotel, star ratings are the ultimate standards that guide travelers to what they expect (Ong, 2014) [22].

Sampling method

Five hotels with 128 respondents are involved in this study using purposive sampling- non-probability sampling. The selected respondents were food service workers include chefs, service staff, cashiers, waiters and steward.

Questionnaire Design

All questionnaire items were adapted based on Haruyama et al. (2014) [23] and JKKP (2008) [20]. In the questionnaire, there are three divisions, namely Part A, Part B and Part C.

Part A: demographics including gender, age, marital status, education level, occupation type and duration of employment. **Part B:** level of physical, chemical, biological and psychological hazards associated with the safety and health of workers **Part C:** frequency of injuries such as sprained or strained, burned, injured or lacerations, back pain, eye injury, electrocution dermatitis, emotional stress, chemical burn and infectious diseases



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Data Analysis

The data were analyzed by using descriptive analysis, through, Descriptive test, ANOVA, T-Test, Post hoc (Scheffé) used to analyze the level of physical, chemical, biological and psychosocial hazards associated with occupational safety and health as well as types of work injuries.

Results and discussion

Objective 1: To determine the level of risks for physical, chemical, biological and psychosocial hazard

Table 1: Overall mean value for level of risk of occupational hazard

Type of Hazard	Overall Mean±SD	P Value
Psychosocial	3.29±.96^a	.000*
Physical	3.76±.80^b	.000*
Chemical	4.13±.74 ^c	1.000
Biological	4.11±.71 ^c	1.000

*Lower mean value indicate higher risk

Psychosocial hazard (3.29±.96) was more likely to occur whereas chemical hazard (4.13±.74) was less likely to occur. ANOVA analysis showed physical and psychosocial hazard have significant difference ($p \leq 0.05$). The post hoc test (Scheffé) shows that only chemical and biological hazard have equal mean of hazard which indicate only psychosocial hazard and physical hazard had higher risk to occur among the four of occupational hazard.

Table 2: Factor related in prevention of occupational hazard

No	Variable that prevent physical hazard	Mean±SD
1	SOP for work provided	4.36±.62
2	PPE provided	4.06±.72
3	Equipment maintenance done properly	3.86±.79
4	Appropriate humidity level	3.5±.73
5	Dry floor surface	3.0±1.16
	Variable that prevent Chemical hazard	
1	Chemical stored separately from food	4.44±.61
2	Chemical labelled and categorized accordingly	4.32±.68
3	Chemical usage by authorised personnel	4.11±.67
4	Using PPE when handling chemical	3.91±.86
5	Given training on handling fire extinguisher	3.88±.90
	Variable that prevent Biological hazard	
1	Given training for hand hygiene practices	4.37±.63
2	Conduct frequent physical check (nails)	3.99±.79
3	Effective Pest control	3.80±.79
4	Scheduled clean and sanitation activities	3.92±.80
5	Practice correct hand hygiene	4.51±.56
	Variable that prevent Psychosocial hazard	
1	Working hours at proper interval and not intensive	2.80±1.16
2	Good communication relationship with co worker	3.88±.81
3	Balanced time between work and personal matter	2.73±.98
4	Satisfying salary level	3.29±.97
5	Given appreciation when perform well	3.77±.92

n=128 *Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

*Lower mean value indicate higher risk



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Psychosocial hazard has the lowest mean value ($3.29 \pm .96$), and indicates higher risk more likely to occur among food service workers. Most workers are stated that working shift are irregular and intensive as well as imbalances between working hours and personal times this research is supported by Lee et al, 2014 [25] added that nature of the work in the hotel sector such as heavy workload, intensive work hours and odd work hours are psychological hazards that can cause accidents among foodservice workers in the hotel sector and ultimately can increase the frequency of employee job injuries.

Result also indicates that chemical hazards has the highest mean value ($4.13 \pm .74$) and indicates lower risk to occur among food service workers based on the responses given by food service workers, chemicals are stored in separate rooms with food and locked, labeled and properly categorized, only authorized workers have access to chemicals and personal protective equipment (PPE) to be worn when handling chemicals and the risk of injury can be minimized and ensures the safety and health of workers and employees. The result also indicate the workers received less training in the use of fire extinguishers ($3.88 \pm .90$) as many of the safety training focus more on food safety due to the importance of it (Chan, 2015) [24].

Objective 2: To determine the type of injury that mostly occurs among foodservice employee

Table 3: Type of injury that mostly occurs among foodservice employee

No.	Type of injury	Mean±SD
1	Strain and Sprain	2.41±1.07
2	Burns	2.45±1.16
3	Cuts and laceration	2.64±1.11
4	Back pain	3.29±.88
5	Eyes injury	1.82±.82
6	Electrocution	1.37±.64
7	Dermatitis	2.20±1.16
8	Emotional Stress	3.63±1.15
9	Chemical burn	2.20±1.01
10	Infectious disease	1.48±.69

n=128 *Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

*Higher mean value indicate higher risk

Emotional stress occur the most (3.63 ± 1.15) as intensive works schedule has contributed to the emotional stress (Lee et al., 2014) [25]. Whereas electrocution occur the least ($1.37 \pm .64$) this is likely because most employees are knowledgeable about electrical hazards and safe working practices to avoid this hazard and electrical shock injuries (U.S Department of Labor, 2002) [6].

Table 4: Type of injury that frequently occurs among foodservice employee according to designation of work area (Kitchen or service)

No.	Type of injury	Mean±SD of Working Area		P value Sig. (2-tailed)
		Kitchen	Service	
1	Strain and Sprain	2.39±1.12	2.44±1.01	.827
2	Burns	2.86±1.14	2.0±1.01	.000*
3	Cuts and laceration	3.03±1.09	2.22±.98	.000*
4	Back pain	3.27±.9	3.31±.84	.829
5	Eyes injury	1.82±.86	1.82±.78	.976
6	Electrocution	1.38±.74	1.37±.52	.945



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7	Dermatitis	2.47±1.15	1.9±1.11	.005
8	Emotional stress	3.82±1.06	3.44±1.21	.061
9	Chemical burn	2.21±.96	2.2±1.07	.944
10	Infectious disease	1.59±.82	1.37±.52	.071

n=128 *Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

*Higher mean value indicate higher risk

For emotional stress results showed that the kitchen workers (3.82 ± 1.06) had higher frequency compared to the service workers (3.44 ± 1.21). This may be due to the nature of work in the kitchen. Haruyama et al. (2014) [23] found that the kitchen worker working in a hot, stressed environment over a long period of time are prone to emotional stress.

Independent T-test indicated that burns ($P \leq 0.05$), cuts and laceration ($P \leq 0.05$) and dermatitis ($P \leq 0.05$) showed significance difference in term of occurrence frequency between kitchen and service staff. The results found that the injuries like cuts and laceration were more frequent amongst kitchen workers (3.03 ± 1.09) compared to service workers ($2.22 \pm .98$). This may be related to the nature of work in the kitchen and service areas. Workers in the kitchen area are usually involved in the use of kitchen knives and slicing machines while handling food (DOSH, 2004). Kitchen knives and slicing machines have a high risk of injuries and laceration if they are not used carefully and do not follow manual or proper steps (DOSH, 2004) [8].

Furthermore, the results also found that the kitchen worker had a higher risk to burns (2.86 ± 1.14) compared to the service workers (2 ± 1.01). This may be because kitchen workers are more vulnerable to fire than service workers. Workers in the kitchen, especially chefs, sous chefs, and food operators have a high risk of burns due to their work nature.

Kitchen workers (2.47 ± 1.15) have a high frequency of dermatitis compared to service workers (1.9 ± 1.11). This is because they are involved in frequent washing activities compared to service worker. Irritant found in detergents and washing work can cause dermatitis (Goon & Goh, 2000) [26].

Conclusion

The results showed that psychosocial hazards ($3.29 \pm .96$) had the lowest mean value, suggesting that psychosocial hazard is a type of hazard that is most likely to occur among the hotel workers. In psychosocial hazard, the balance of work time and personal time ($2.73 \pm .98$) is more likely to contribute to psychosocial hazard while good communication with co-workers and supervisors ($3.88 \pm .81$) is less likely to occur. The results showed that chemical hazards have the highest mean value ($4.13 \pm .74$) and this indicates that chemical hazards are less likely to occur among hotel workers. For chemical hazards, the lack of fire extinguisher training ($3.88 \pm .90$) is more likely to contribute to chemical hazards while the separation of chemicals in separate rooms with food and locks ($4.44 \pm .61$) is less likely to occur.

In addition, Emotional stress (3.63 ± 1.15) is the most common occupational injury among hotel food service workers. The results showed that the kitchen unit workers (3.82 ± 1.06) had a higher frequency of emotional stress compared to the service workers (3.44 ± 1.21). Additionally, electric shock ($1.37 \pm .64$) is the least occupational injury among workers. The frequency of electric shock amongst the kitchen side workers ($1.38 \pm .74$) was high compared to the service workers ($1.37 \pm .52$). As attention should be given to the physical and psychosocial hazards and injury associated with it as it shows a higher risk of occurrences.

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