AWARENESS OF WORKPLACE HAZARDS IN SELECTED UNIVERSITY'S STAFF

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ABSTRACT

Working condition such as work environment, work organization, tasks and work place play a crucial role to the employees in performing their daily routines. These elements may simply determine the level of employees' motivation, performance and productivity. A good working condition in an organization is considered to cover health and safety issues. Therefore, this study is conducted to assess the awareness of workplace hazards in selected university's workers, namely University A. Views from the academician and non-academician are been focused by using self-administrative questionnaire and observation through site visit in few areas such car park, elevator, informal learning spaces and office. The details of the awareness towards hazards in workplace that were taken into considerations were policy and procedures; environments and equipment; information and trainings as well as attitudes and commitments. The findings indicate that awareness level among staff towards hazards in workplace is high and there is a significant relationship among the studied variables which directly influenced the result of study. The study suggests that it is vital for the management to participate and promote safety culture in the workplace.

Keywords: Awareness, knowledge, hazards, workplace, university's workers.

ABSTRAK

Keadaan sesebuah tempat kerja seperti persekitaran kerja, organisasi kerja, tugas serta tempat kerja memainkan peranan penting kepada pekerja dalam melaksanakan rutin harian mereka. Unsur-unsur ini boleh menentukan tahap motivasi, prestasi dan produktiviti para pekerja. Keadaan kerja yang baik dalam sesebuah organisasi adalah keadaan yang mempertimbangkan serta merangkumi isu-isu kesihatan dan keselamatan. Oleh itu, kajian ini dijalankan adalah untuk menilai tahap kesedaran kakitangan di universiti terpilih iaitu Universiti A tentang bahaya di tempat kerja. Pandangan dari ahli akademik dan bukan akademik difokuskan dengan menggunakan kajian soal selidik dan pemerhatian melalui lawatan tapak di beberapa tempat seperti tempat letak kereta , lif, ruang pembelajaran yang tidak formal dan pejabat. Butiran-butiran kesedaran mengenai bahaya di tempat kerja yang diambil kira adalah seperti dasar dan prosedur; persekitaran dan peralatan; maklumat dan latihan serta sikap dan komitmen. Penemuan menunjukkan bahawa tahap kesedaran di kalangan kakitangan Universiti A terhadap bahaya di tempat kerja adalah tinggi dan terdapat hubungan yang penting antara pembolehubah yang dikaji yang secara langsung mempengaruhi hasil kajian. Kajian ini selanjutnya menunjukkan bahawa pentingnya bagi pihak pengurusan untuk mengambil bahagian dan mempromosikan budaya keselamatan di tempat kerja.

Kata kunci: Kesedaran, pengetahuan, bahaya, tempat kerja, kakitangan universiti.

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CHAPTER 1: INTRODUCTION

1.1 OVERVIEW

Workplace environment is a combination of air quality, lighting, temperature, humidity and decoration (Skwarczynski et al., 2010). The workplace can be a healthy and comfortable place to work in if the correct combination of these elements is maintained. Workers may expose to hazards that cause illnesses and may carry out activities that result in serious injuries at workplace. Each type of work may exposes to the different hazards. They include slips, trips and falls; struck by objects, electrocution, confined spaces, machinery and equipment; poor housekeeping, chemicals, working from height or any raised work area.

Hazard is a source or situation with a potential for harm in terms of human injury or ill health, damage to property, damage to the environment or a combination of these (Scheer et al., 2014). Most hazards are dormant or potential, with only a theoretical risk of harm; however, once a hazard becomes "active," it can create an emergency situation. More directly, a hazard is a source of potential harm or negative outcome from past, current, or future exposures.

Hazards can be broadly grouped based on their nature. Workplace hazard can be defined as a risk to a person usually arising out of employment. It can also refer to a work, material, substance, process or situation that predisposes or itself causes accidents or disease at a workplace. Workplace hazards can be physical, chemical, biological, ergonomic, physiological or behavioral that leads to workplace accidents and impact on firms' productivity and profitability.

Studies (Aksorn & Hadikusomo, 2008; Hsu, Le et al., 2008; Zubaidah Ismail et al., 2012) in the field of occupational safety and health have focused on the constructions and manufacturing premises. However, other industries also demonstrated a need for

safety and health agenda. Occupational and Safety Act 1994 (Act 514) has outlined the safe working environment in the offices, yet less study has looked into the situation.

News reported that all students at schools and institutions of higher learning in Malaysia should be introduced to occupational safety and hazards (OSH) aspect to prepare them to respond to an accident or emergency situation (*Berita Minggu, 2012*). The effort aims to reduce accidents by providing appropriate information to the academic staff, non-academic staff as well as students (*BERNAMA, 2012*). Most workers assume that universities are the safe and healthy workplace as the academicians and supporting staff are viewed as professionals who are capable of maintaining their own safety and health.

Hazards arising from workplaces could impair the health and well-being of the workers. Hence, it is necessary to anticipate, recognise, evaluate and control such hazards. In an effort to promote the development of safety and healthy workplace, the issue is important as it is one of the important functions for the organization and workers to conduct their daily operation and task safely and correctly. Workers that have high level of safety and health awareness are able to conduct their work effectively and efficiently.

1.2 PROBLEM STATEMENT

Nowadays, the numbers of accidents happened at workplace is increasing every year either in the industries or educational institution and around 270 million people in the world fall victim to occupational injuries, fatal and non-fatal every year. International Labour Organization (ILO) report estimates that approximately 2 million occupational fatalities occur across the world annually (ALLI, 2008). Safety and health are important aspects especially when it involved high risk jobs such as in the factory, construction and other industries that use chemicals, machines and others. For examples in the education institutions, there are various machines in the workshops and hazards

materials in the laboratories which need special attention regarding to safety procedures. Most of the equipment or machines have to handle with the correct procedures with good practices and care. If not, the accident can happen anytime and the number of accidents and injuries would be increased.

Safety in workplace is one of the most essential issues that cannot be taken lightly. As to date, there are number of cases that can be associated to the hazards in workplace that have been neglected such:

(i) Electrical issues - Frayed cords, missing ground pins, improper wiring, electrical outlet overload, loose electrical cords, short circuits

(ii) Chemical issues - Cleaning products, paints, acids, gases, solvents, sensitizers and corrosive chemicals

(iii) Inadequate housekeeping - Bad storage and filing systems, cord running across the floor

(iv) Ergonomic safety issues - Poor posture, improperly adjusted workstations and chairs, frequent lifting, vibration, repeating the same movements over and over

(v) Physical - Temperature extremes (too cold or too hot), loud noise, photocopiers not ventilated

(vi) Psychological - Stress, shift works, interpersonal relationship, violent at work, workload demands

(vii) Biological issues - Exposed to airborne and blood born virus, bacteria and fungus

Although numbers of campaign and advertisement have been conducted but the number of accidents and injuries in workplace are still increasing. Hence, it is important to understand the causes and impact of the hazards in workplace as well as to increase the level of awareness of hazards so that the preventive measures or corrective action can be taken for a safer and healthier workplace.

Therefore, the questions of this study are as follows:

(i) What is the understanding level of staff towards hazards in the workplace?

(ii) What is the awareness level of staff towards hazards in the workplace?

(iii) What are the factors affecting the staffs' awareness level in the aspect of hazards in the workplace?

(iv) What are the steps need to be taken to promote awareness of hazards in workplace?

1.3 AIM AND OBJECTIVES OF STUDY

The aim of this study is to assess and investigate the awareness level of workplace hazards in selected university's staff, namely University A, in performing their daily routines. This study uses qualitative and quantitative approach in assessing and analyzing hazards in the workplace with the main objectives as following:

(i) To assess the understanding of staff towards hazards in workplace

(ii) To investigate the awareness level of staff towards hazards in workplace

(iii) To determine the dominant factors affecting the awareness level of staff in the aspect of hazards in workplace

(iv) To propose preventive measures and management practice to promote awareness of hazards in workplace

1.4 SCOPE OF STUDY

This study was carried out in a selected university, namely University A located in Selangor Darul Ehsan, Malaysia involving the academic and non-academic staff from various departments with different functions. The results of the study expected to raise the level of awareness towards hazards in the workplace. In general, the employer and employees can identify what are the common causes that contribute to the workplace

hazards as well as evaluating the effects and further action on preventive measures in controlling them to avoid injuries in the future.

1.5 BACKGROUND OF STUDY

This study is a case study of the academic and non-academic staff in one of the selected university in Malaysia, namely University A. University A has two (2) campuses located in Selangor Darul Ehsan and Perak Darul Ridzuan. However, this study is only conducted on the academic and non-academic staff located in Selangor Darul Ehsan campus only.

University A located in Selangor Darul Ehsan has two (2) buildings namely Block KA and Block KB which houses a total of approximate two thousand one hundred and fifty (2,150) employees as well as a total of approximate fifteen thousand four hundred and ninety (15,490) students included foundation, undergraduate as well as postgraduate degree programs covering numerous disciplines of study and research. These two (2) buildings consist of ten (10) departments, four (4) faculties and included of two (2) stacks parking lots at the basement e.g. basement 1 and basement 2 for each building. It is a purpose-built campus with surrounding facilities and services that support banking, housing, public transport, shopping and meals for the convenience of the staff and students.

Block KA has two (2) faculties such Faculty of Accountancy and Management and Faculty of Medicine and Health Sciences. Meanwhile, Block KB has two (2) faculties such Faculty of Creative Industries, Faculty of Engineering and Science; and departments such Registrar's Office, Division of Finance, Division of Admissions and Credit Evaluation, Department of Safety and Security and many more. The selection of the University A is based on the rationale for the location of the building and the building in general that have laboratories and workshops at high risk where it can cause

serious accidents and injuries to the staff and even to the students if not handled in a safe manner.

As example, Faculty of Engineering and Science has fifty three (53) laboratories and workshops such as CNC and robotics laboratory, mechanical and timber workshop, process control and reaction laboratory, bioprocess and environmental laboratory, etching and PCB workshop, heat treatment and furnace laboratory, chemical engineering laboratory and much more. Furthermore, the Faculty of Medicine and Health Sciences has laboratories such as molecular biology and genetics laboratory, cell / tissue culture laboratory, animal holding facility and many more.

1.6 LIMITATION OF STUDY

This study only illustrates the awareness level of hazards in workplace among the staff in the organization that is assessed, namely University A. Therefore the findings form this study cannot be generalized to other higher institutions neither public nor private because there are differences in the aspects of the mission, vision and objectives of the university as well as the cultural, attitude and environment differences that influenced the awareness level of staff in the related of the study.

The respondents for this study involved the academic and non-academic staff for campus located in Selangor Darul Ehsan only and indirectly causing the generalization of the information can only be done to the entire staff who work in the Selangor Darul Ehsan campus only. A self-administrated questionnaire was distributed online to five hundred and thirty eight (538) potential respondents randomly via Google form format. However, due to time constraints and compact schedule, only one hundred (100) respondents were successful completed the questionnaire distributed. Therefore, the analysis of the data is based on the nineteen percentages (19%) of the returning questionnaires. In addition, the accuracy of the study is based on the answers given by the respondents through distributed questionnaire. Therefore, the reliability of this study

is highly dependent on the honesty and sincerity of the respondents in responding to each question.

The observation through site visit was concentrated on selective areas to obtain detailed results such as car park area, elevator, informal learning study area and office instead of the whole building areas especially laboratories, workshops, classrooms, restroom as well as pantries. This is due to time constrained, limited time frame and working commitments.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses the relevant acts of safety and health in Malaysia, comprehensive definitions and related past studies for better understanding on the topic of study.

2.2 LEGISLATION AND ENFORCEMENT

Legislation provides workers with minimum standards of protection in the workplace. Legislation is only effective in protecting workers when it is support by the government enforcement. Ideally, legislation should:

(i) Protect all workers

(ii) Be oriented towards the prevention of occupational illness and injuries by requiring employers to comply with regulations that are more protective than just existing minimum standards.

(iii) Include provisions for adequate compensation and rehabilitation for workers when needed.

(iv) Include provisions for sufficient workplace inspectors who are properly trained and equipped.

(v) Include strong enforcement.

(vi) Allow for strong penalties for employers who break the law.

(vii) Address any region-specific needs.

In addition, the enforcement should:

(i) Ensure that sufficient trained, equipped personnel with access to success of information are available to inspect workplaces and enforce laws.

(ii) Include regular, unannounced inspections of all workplaces.

(iii) Allow for penalties that are equal to the illegal action committed, including severe penalties for very serious offences.

(iv) Be supported by strong and protective legislation.

The term used in the health and safety may vary in different countries. Four of these terms are act, regulation, code of practice and guide (International Labour Office).

2.2.1 Acts

Acts are basically legal statements of the general health and safety principles and responsibilities in a particular country and they are made or approved by the governments or parliaments of individual countries. Acts are fully supported by law, therefore potentially they have a great deal of power, but generally that power is only effective with adequate enforcement.

2.2.2 Regulations

Once a health and safety act is passed, then a minister (usually the Minister of Labour), the Cabinet or the state, provincial or even national government will develop detailed regulations. Regulations are fully supported by law so employers are required to comply with them, just like the overall act which they accompany. Regulations tend to cover specific industries or hazards and state the mandatory minimum standards and objectives for hazards control, 'safe levels', training, etc. and they apply specific workplaces (Freedman & Jaggi, 2002).

2.2.3 Codes of practice

Codes of practice provide general guidance to employers and workers on how to comply with the minimum standards and objectives that are detailed in the regulations. These codes are adapted and amended by a relevant government body, usually with the Ministry of Labour. Although code of practice is not required by law, but they can be used in legal proceedings as evidence.

2.2.4 Guides

Guides or notes provide official detailed technical information and recommendations to help employers comply with health and safety regulations. Guides, like code of practice, are adopted and amended by relevant government bodies. They are not required by the law but they explain the type of action that employers should take to comply with health and safety laws.

In Malaysia, the Department of Occupational Safety and Health (DOSH) carried out enforcement activities aimed at ensuring the safety, health and welfare of workers and other persons from the hazards of work activities. The specific occupational health and safety legislation enforced by the Health and Safety Authority (HSA) and applicable to the office, specifically in education sector includes Employees' Social Security Act 1969 (Act 4), 2016, Occupational Safety and Health Act 1994 (Act 514), Guidelines on Occupational Safety and Health in the Office, 1996, Guidelines for the Preparation of a Chemical Register, 2000, Guidance for the Prevention of Stress and Violence at the Workplace, 2001, Guidelines on the Control of Chemicals Hazardous to Health, 2001, Guidelines on First Aid in the Workplace (2nd Edition), 2004, Guidelines for Hazard Identification, Risk Assessment and Risk Control (HIRARC), 2008, Industry Code of Practice on Indoor Air Quality 2010 and etc. Enforcement activities that were carried out by DOSH include approval and authorization, registration, certifications, inspections, investigations as well as litigations (Department of Occupational Safety and Health DOSH, n.d.).

2.3 THE OCCUPATIONAL SAFETY AND HEALTH ACT 1994 (ACT 514)

Occupational Safety and Health Act (OSHA) 1994 is an Act that provided the legislation framework to secure the safety, health and welfare of persons at work and to protect other against risks to safety or health in connection with the activities of persons at work. The introduction of a comprehensive Occupational Safety and Health Act

(OSHA) 1994 was in response to the need to cover a wider employee base and newer hazards introduced in the workplace. The Act was derived from the philosophy of the Roben's Commission and Health & Safety at Work Act 1974 in United Kingdom, emphasizing on self-regulation and duties of employer, employee and designer / manufacturer. Under the Occupational Safety and Health Act (OSHA) 1994, employees and self-employed are required to certain standard on safety, health and welfare.

Employer must ensure the safety, health and welfare of their employees. To comply, the employers need:

(i) Provide or maintain equipment and systems of work that are safe and without risks to health.

(ii) Ensure the equipment and substances are used, stored and transported safely and without risks to the health.

(iii) Provide information, training and supervision that cover the safety and health of employees.

(iv) Maintain their place of work in safe condition including entrances and exits.

(v) Employers must also ensure the safety of visitors to the places of work.

Furthermore, the employees must:

(i) Cooperate with their employers in their efforts to maintain the required level of safety and health.

(ii) Take reasonable care of the safety and health of one-self and others.

(iii) Obey environmental, health, safety and security rules.

(iv) Complete the required training for your job.

(v) Report injuries, accidents and incidents within 24 hours.

(vi) Report known or suspect hazards and risks

(vii) Do not place yourself or others in unnecessary risk.

Designers, manufacturers and suppliers of equipment and substances must:

(i) Ensure that products are safe and not a risk to health when properly used

(ii) Provide other information about the safe use of their products.

(iii) Make available information about research and testing.

The Act is referred as a reflective-type of Act which was less perspective; cover all workers except those in armed force and those who work aboard ship, which were covered by other legislation. The Act emphasizes on duties of case by individuals thus empowering the participation of all persons in OSH. The objectives of the Act are as follows:

(i) To secure the safety, health and welfare of persons at work against risks to safety or health arising out of the activities of persons at work.

(ii) To protect persons at the place of work other than persons at work against risks to safety and health arising out of the activities of persons at work.

(iii) To promote an occupational environment for persons at work that is adapted to their physiological and psychological needs.

(iv) To provide the means whereby the associated occupational safety and health legislations maybe progressively replaced by a system of regulations and approved industry codes of practice operating in combination with the provisions of this Act designed to maintain or improve the standards of safety and health.

Furthermore, the Act's objectives would be achieved through a new approach that resolves around the conviction that a workplace will have an excellence chance of attaining a good standard of OSH if it has a proper OSH management system. This can only occur if the workplace's top management possesses great commitment to draw up a general OSH policy and to establish the organization and arrangements required for the effective and successful implementation of that policy (Ir. Hj. Abu Bakar Che Man, 2000).

2.4 OCCUPATIONAL, SAFETY AND HEALTH CONCEPTS

Occupational, safety and health (OSH) is a multidisciplinary field concerned with the safety, health and welfare of people at work. The goal of OSH includes fostering a safe and healthy work environment (Chapman, 2012). The concepts of OSH are as following:

(i) Accident prevention is an essential part of good management and workmanship

(ii) Management and workers must cooperate

(iii) Top management must take the lead

(iv) A define and known safety and health policy

(v) Organization and resources to achieve policy

(vi) Best available knowledge and methods

In general, the key concepts of OSH can be illustrated in the **Figure 2.1.**

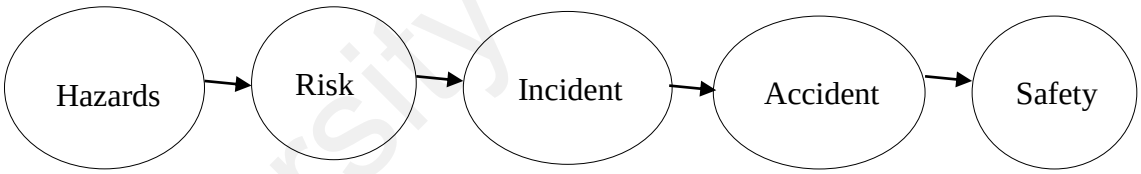


Figure 2.1: Key Concepts of OSH

2.4.1 Hazards

Manuele (2010: 33) defines hazards as "the potential for harm" and further to describes hazards as "all risk". Hazards contribute to workplace risk and include the actions of people and the characteristics of equipment, dust and chemicals (Schulte & Salamanca-Buentello, 2007), for example. Lowe et al., (2012) divided hazards into two (2) major types which are safety hazards and health hazards. Safety hazards may cause physical injuries and accidents as well as immediate harm such as broken bones, bruises, electrocuted or sprain. While, health hazards may cause long-term harm and

may take years to develop such loss of hearing, heart disease, cancer and reproductive problems. Hazards were placed into four categories which are obvious hazards, trivial hazards, emerging hazards and hidden hazards as is **Table 2.1**.

Table 2.1: Topology of Hazards

Category	Examples of hazards
Obvious	Unguarded machinery, electrical leads laying in water, uneven ground and unsupported ground
Trivial	Screwdriver on the floor, cable across access ways and broken light switches
Emerging	Loose rung on a ladder, unlabeled chemical bottles, repetitive works and improper use of equipment
Hidden	Underground electrical cable, unexpected ground movements and exposure to hazards substances e.g. gases

The workplace hazards found among workers are similar worldwide. The source of the hazards is the work environment which can be categorized as follows (Grant and June, 2012):

2.4.1.1 Biological Hazards

Biological hazards exist in exposure to bacteria, fungi, parasite and other living organism that can cause acute and chronic infections by entering the body either directly or through breaks in the skin. Occupations that may expose workers to this type of hazards are such occupations that deal with plants or animals or their products, occupations that deal with food and poof processing, laboratories and medical personnel as well as any occupations that result in contact with bodily fluids. The type and examples of biological hazards are such animals / rodents i.e. allergies, manure; insects i.e. roaches; sick people i.e. cold and flu; needles and syringe, AIDS, hepatitis; and plants i.e. pollen, mold, poison ivy.

2.4.1.2 Chemical Hazards

Chemical hazard is an occupational hazards that caused by exposure to chemicals in the workplace that can cause acute or long term detrimental health effects. Airborne chemical hazards exist as concentrations of mists, vapors, gases, fumes or solids. The hazards can enter the body by inhalation i.e. breathing; ingestion i.e. swallowing such as eating and drinking; absorption i.e. through directs contact with the skin; and through openings in the skin i.e. cuts. The type and examples of biological hazards are such solids i.e. dry paints; dust e.g. cement bags, fiberglass, asbestos; liquids and vapor i.e. paints, pesticides, cleaning products; gas i.e. aerosols, carbon monoxide, vehicle fumes, hydrogen sulfide and fumes i.e. welding, asphalt.

2.4.1.3 Ergonomic Hazards

Ergonomic hazard is the science of ergonomics studies and evaluates a full range of tasks including, but not limited to lifting, holding, pushing, walking and reaching. Generally, these hazards are caused by poorly designed workplace or processes with four (4) major areas which are human factor engineering, work physiology, occupational biomechanics and anthropometry. The type and examples of ergonomic hazards are such repetitive motion i.e. assembly line, poultry and meat cutting, using computer keyboard; heavy lifting i.e. boxes.

2.4.1.4 Physical Hazards

Physical hazard is the transferring of energy from the object to the person that can cause illness. These include excessive levels of noise i.e. machinery, motors, explosions, loud music; vibration, illumination and temperature e.g. working outside during the summer time / winter time, ovens, freezers; as well as the ionizing and non-ionizing electromagnetic radiation.

2.4.1.5 Psychological Hazards

Psychological hazards affect the mental well-being or mental health of the worker by overwhelming individual coping mechanisms and impacting the worker's ability to work in a healthy and safe manner. Examples, work related stress, violence from outside and inside of the organization, bullying, boring, repetitive tasks, production pressure, stress, low pay as well as lack of recognition.

2.4.2 Risk

Risk is a combination of the likelihood of an occurrence of a hazardous event or exposure with specified period or in specified circumstances and the severity of injury or damage to the health of people, property, environment or any combination of these caused by the event or exposure ((DOSH, 2011).

2.4.3 Incident

Incident in the context of health, safety and environment is the occurrence of any unintended event that disturbs normal modus operandi. As per occupational safety and health administration (OSHA) "an incident is an unplanned, undesired event that adversely affects completion of a task." An incident is also referred to as a "near miss." As defined by the department of health safety of Memorial University, it is an "event that has the potential to lead to an accident." It is a clear warning that there is something wrong somewhere in the workplace and it needs to be thoroughly investigated to take preventative actions as to not have the same even reoccur.

2.4.4 Accident

Accident may be defined as unplanned and uncontrolled events in which the action or reaction of an object, substance, person or radiation results in personal injury or the probability thereof (Heinrich et al., 1980). As stated by Male (2003), human factors are likely to contribute to this problem on a number of levels including factor relating to

individuals (i.e. drivers and pedestrians), the nature of the job (i.e. design of the workplace and vehicle), and the organizational (i.e. training procedures and management systems). A zero accidents goal in the work environment is a Herculean task and almost impossible to accomplish, but an effectual causal analysis paradigm might lead to the implementation of successful intervention strategies that will effectively cut down the high human and social cost associated with occupational accidents (Zakaria et al., 2012).

According to (Martínez-Rojas et al., 2015), there are three main factors contributing to the accident namely the attitude of workers, working conditions, and employers. Among the factors contributing to the accident are the personal characteristics of the employees such as bad habits including negligence, easy taking attitude, boredom, playful behavior and fighting and insensitivity risk. While the work situation is a machine that is not maintained periodically, poor design, less precautionary equipment, smooth working environment, inadequate lighting conditions, high noise levels, exposed to smoke and dust, neatly arranged tools, there are chemicals and gases in the workplace. Furthermore, among the factors that arise from employers causing accidents are unsatisfactory supervision, overtime work, insensitivity to worker fatigue, lack of adequate training in equipment and machinery handling, non-enforcing regulations, not sensitive to employee complaints, underestimates occupational safety and health and is not prepared to provide for occupational safety and health programs. As conclusion, **Table 2.2** shows the factors that can create accidents in workplace. (Nurul Ulfa et al., 2011)

Table 2.2: Factors that can Create an Accident

Personalized Features	Behavioral Signs	Specific Types of Signs	Special Events of Accident
- Education level personality	- Unwanted attitudes	- Not paying attention	- Probability of individual

Figure 2.2: Hierarchies of Control Measure

[Source: Recommended Practices for Safety and Health Programs, OSHA, October 2016] (https://www.osha.gov/shpguidelines/docs/OSHA_SHP_Recommended_Practices.pdf)

2.5.1 Elimination

Complete removal of a hazard from the work area. Elimination is the method preferred in controlling hazards and should be selected whenever possible such dispose of unwanted chemicals (ALLI, 2008).

2.5.2 Substitution

Replacing the hazardous materials, methods or processes with something less hazardous and lower risk impact with usage of less hazardous chemicals, equipment and devices by substitute it with the safer one such as lift smaller packages, replace of substances with a less hazardous substances.

2.5.3 Isolation

Segregate process handling system, chemicals hazardous to health either by physical barrier or distance from workers such as lockout system, well ventilated room, place barriers around spill until cleaned up, or enclose machinery parts.

2.5.4 Engineering practice

Installation, modification and redesign to prevent an unwanted event and to mitigate harmful consequences such as local exhaust ventilation, provide a trolley to move heavy loads.

2.5.5 Administrative practice

Policies, procedures and training aimed to limit exposure to the hazards where include measures that improve the knowledge and awareness of hazards to reduce the risk such as posting signage, introduce job rotation, ensure equipment is regularly

maintained, an exposure control plan, removing all unsafe devices, consistent raining on the use of safe devices and establish safe working procedures (ALLI, 2008).

2.5.6 Personal protective equipment (PPE)

Lombardi et al., (2009) , had listed a few factors that influence worker decision to wear PPE at selected manufacturing, construction, and service / retail industries which were perception on hazard and risk, PPE usage barriers in term of lack on comfort/unfitted, and enforcement. Akbar-Khanzade et al, 1995, conducted a study on the degree on comforters of worker wearing PPE at automotive encapsulating company and about 30% of employee acceptable with PPE. Akbar-Khanzadeh et al., concluded design of human –factor aspect such as better fitting, light weight, which more emphasized on physiology, psychology, and physical factors. They also emphasized on adequate training on personal protective equipment to workers.

(Crawford, 2005) say job hazards can be categorized into two types namely health hazards and physical hazards. Health disasters are the internal damage of workers in the lungs, abdomen, ears and the brain. While physical disasters are associated with protection against body structure. It is therefore apparent that body protection devices play an important role in avoiding the disaster. Body protection tools can be divided into eye protection, face protection, head protection, ear protection, hand protection, foot protection, body protection and protection from falling. Personal protective equipment as described above is required when undertaking a risky task in order to ensure the safety and health of the employees. This is because frequent accidents arise from the lack of use of these safety protection devices. Hence, through the enforcement of the JKKP 1994, particularly through section 15 (2) the government has made it obligatory for employers to provide training in how and when to use safety protection equipment and to ensure employees are always using safety protection tools. Inspection and maintenance of safety protection devices should be carried out frequently to ensure they

are in a safe state. Warning signs should also be used to remind workers to wear appropriate protective equipment.

2.6 SITUATION AWARENESS

Situational awareness is not a new concept; in fact it has been used since World War I (Stanton et al., 2001). Other than military, this concept is widely used in other areas such as business (Lee et al., , construction (Mahalingam & Levitt, 2007). In a view of health and safety perspective, situational awareness can be described as the assessment of the hazardous working conditions that include identifying any potential deviations from approved workplace standards (Stokols, 1992). Due to this, (Ibrahim et al., 2012) suggested that situational awareness should be included as part of the safety education. The study further recommends the safety education includes accurate instruction about emergency equipment procedures, situational awareness, emergency responses, and relevant cabin-safety regulations.

Working conditions such work environment (i.e. air quality, climatic condition, products and substances), work organization (i.e. psychological demands, tasks control, support from colleagues and chief), work structure (i.e. workplaces, machines, equipment and installation) and tasks (movements, positions, physical load / handling) plays a crucial role to the employees in performing their daily routines. These elements may simply determine the level of employees' motivation, subsequent performance and productivity.

As such, both employees and employers are responsible for safety issues. From a management point of view, the installation of safe workplace begins with identifying adequate information for all staffs. Once the proper safety information is identified, it must be disseminated to employees using various channels. This is due to the fact that most employees require safety information to improve their lacking of knowledge of awareness on safety issues. In addition to having safety information, one of the

important positive investments to increase occupation, safety and health awareness is through continuous training and education. Emergency procedures are practiced during mock sessions as only through examples the employees can perceive how to react to the situation. However, although management has informed the employees about the procedures to avoid risk, there are possibilities that the employees will still get involved in risky situations. This situation occurs if the employees are not safety conscious. Hence, it is also vital for all employees to play significant role in practicing safety behavior.

Besides establishing proper platforms for workers' safety, management commitment is also important to ensure that training on safety is conducted and well participated. (Ali et al., suggest that safety climate is shaped in organizations whose management is committed in training programs. Moreover, conducting training programs that are tailored to the needs of the workers would have positive effects on workers' attitudes, work practices, and self-reported injury rates (William et al., 2010). Similarly, another study found that safety training and emergency preparedness among employees are able to increase the safety participation among employees. Furthermore, when management is committed and engaged in safety training program, workers' attitude towards safety is enhanced (Cox & Cox, 1991). Employers also offer incentives to employees in order to increase participation in safety training. Such incentives include safety rewards for groups as it fosters better safety performance among construction workers.

On top of that, management which provides safe workplaces such as proper office layout and comfort helps in improving employees' productivity (Leblebici, 2012). Another safety area which is normally neglected by management is pollution. Noise pollution at a workplace for example, gives a huge effect to the workers. Around one-third of the employees that exposed to potentially dangerous levels of noise for at least one-quarter of their time at work, not only damage their hearing, but also put their

employers at risk (Pitt, 2008). The study shows that Local Government of New South Wales has used safety workshops to address noise occupational issues as well as disseminating the related information to the employees. Management needs to develop an isolated area for those who are exposed to the noise pollution so that prevention programs can be targeted to them. This benefit the organization in the long run as the organization is perceived as safe workplace for all. Self-awareness is the most critical step because without it, both employer and employees won't recognize the need for change.

2.7 REVIEW OF PAST LITERATURE

Overheul, 2001 has conducted a study titled "20 Years of Safety" found that raising the awareness of excellent culture of safety and health is needed to succeed in the global market challenge. His research also shows that in the past 20 years, most organizations regard employee safety concerns as a burden and do not benefit the organization. But at present there are many organizations looking at employee safety as a profitable investment. Among the recommendations for awareness raising programs that he has suggested is to organize and provide talks and promotions related to occupational safety and health, advise in the form of counseling to employees, and provide information related to occupational safety and health or workplace.

Meanwhile, (Aziz et al., 2015) has conducted a study on the knowledge of industry workers on occupational safety and health management . This study was conducted on 100 respondents from around Kelang Valley and Penang. From his survey he found that 85% of respondents stated that the management did not take seriously the aspects of occupational safety and health and safety and health training programs. Furthermore, training programs are organized on a need basis rather than on a regular basis. The study found that the management did not conduct inspection to the workplace, did not conduct regular safety training, irregular work environment caused unexpected accident. Finally,

he concluded that the management involved actively in developing the awareness and importance of occupational safety and health can increase security.

Further studies undertaken by JKKP (2000) aimed at measuring safety levels based on the Occupational Safety and Health Act 1994 and the Factories Act, 1967 were randomly conducted on 42 construction and industrial sites in Johor. The study found that 55% were in the category of satisfaction. From the study, it is found that occupational safety and health committees are essential to play the role and responsibility of occupational safety and health as well as to ensure continuous progress in addressing occupational safety issues. The Committee is also responsible for conducting research and research on occupational safety and security. The findings show that the enforcement of safety clothing such as safety shoes, eye protection, safety hats and gloves can protect employees from getting injured. In addition to employee supervision, monitoring of plant and equipment safety and safety that is perfect and safe to use will create a harmonious work environment. In order to achieve a better level of security, workers are required to always practice safe habits ie by using orderly steps, complying with the prescribed security laws and always being wary of future risks. The study also found that employers need to focus fully on safety and health issues by implementing effective security programs, providing the necessary training for each employee and caring for the welfare or safety of employees.

In the industry sectors, Fadzli et al. (2002) has found that the awareness of OSH among the estate rubber tappers was at a satisfactory level. From the finding, he also found that level for not following the order, rules and procedure of OSH was low. Thus, in order to increase the level of awareness he had suggested programs such as promotion organize and give a talk on OSH, give counseling and related information of OSH or work place. Rahim et al., (2018) did a study on the causes of accident at construction site. They concluded that the main cause of construction accidents found

are the workers carelessness to obey work procedure, work at high elevation, working without safety devices, poor site management, harsh work operation, low knowledge and skill of workers, failure to use personal protective equipment and poor workers attitude about safety. Harper and Koehn (1998) in its review of construction site safety management in the Southeast, Texas has shown that whether or not an accident involving injuries or fatalities in the construction industry can be controlled by holding effective safety management program. The program emphasizes a safe working operation, employee awareness of dangers and risks, direct employee participation in a issues, frequent investigation, construction site and environmental protective.

Meanwhile in the education sectors, Kulkarni et al., (2013) did a research on awareness and practice of road safety measures involved undergraduate medical students in a South Indian States. The area or field of this study is road (medical students in numerous medical colleges). Safety measure that been used in this study is road safety and road sign. Method that been used is questionnaire analysis using SPSS software. The result of awareness and practice of road safety measure was low among the respondents. The recommendation is access current situation regarding road safety measures across various sub-group and populations. Yahya Thamrin et al. (2010) in its review of time trend and predictive factor for safety perception among incoming South Australian University students show the safety measure for his study is safety skill, confidence and attitude, safety training and injury experience. Method used in this study is questionnaire analysis which is using SPSS software to obtain the data. The overall results indicate strong indication between safety training, skills and confidence. However, the attitude is not significant. Durrishah Idrus et al. (2004) did a research on Level of Awareness of UTM Staff on Occupational Safety and Health at the work place. This research is doing for university staff. The safety measure for determine awareness is safety policy, safety procedure, safety training, tools and equipment, safety

committee, commitment and attitude; and working environment. The method that has been used for this study is questionnaire analysis by using SPSS software. The overall result is IPTS have average level of compliance of OSH with 3.54 and dominant factor that comply with the OSHA 1994 are commitment and attitude, safety training and safety procedure. For recommendations, improvement in self-evaluation, effective communication, OSH committee, effective safety program and reward program.

2.8 CONCLUSION

Based on the literature review it is evident that health and safety measures are necessary in a work place environment to ensure worker's safety and well-being so as: to maintain and improve productivity and quality of work; to minimize absenteeism and labour turnover; to reduce indiscipline and accidents; to improve employee motivation and morale; to reduce spoilage and cost operations and; to reserve the physical and mental health of employees. But for this to be realized a good health and safety management system and program should be put in place by providing; a written statement of safety policy, organization and allocation of responsibilities for health and safety matters, train employees in health and safety matters, establish safety committee, ensure first aid facilities, provide appropriate procedures and documentations to minimize accidents and to regularly consult with employee representatives. The organizations should have training and induction to all employees so that they made aware of potential hazards and given instruction on how to avoid the possible risks. The challenge may be short-term and long-term. In the short term, high-profile organizations may lose skilled workers. They may be moving to organizations that are more secure and conducive to their observations. In the long run, the organization may have created a bad reputation so long as potential "fearful" workers are seeking employment with the organization. It will indirectly affect the organization and therefore, the aspect of employee awareness on occupational safety and health should always be prioritized by

the organization that wishes to progress. The government on the other hand should intensify measures to strengthen the institutional framework and inspectorate activities in order to achieve a meaningful administration of the occupational health and safety act, (2007).

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION

This chapter will discuss the methods used to collect the data and generate the findings reported where includes the stages of study, data sampling, data collection method and data analysis method.

3.2 STAGES OF STUDY

This study is conducted in selected university, namely University A to access and evaluate the perceptions of academic staff and non-academic staff on the awareness of hazards in the workplace. There are five (5) stages in this study and each stage is conducted in several steps in order to achieve a good outcome. The stages of study are in the **Figure 3.1** while the methodology stages of study are in the **Table 3.1**.

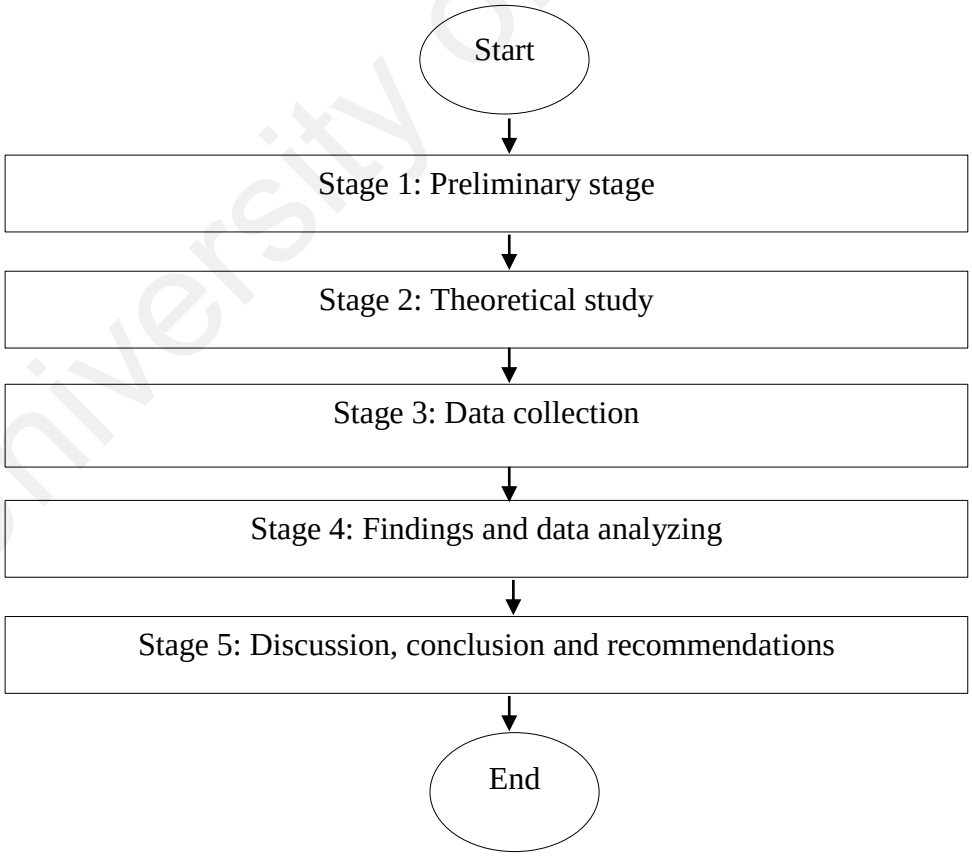


Figure 3.1: Stages of Study

Table 3.1: Methodology Stages of Study

Stage	Action	Descriptions
Stage 1: Preliminary stage	(i) Problem identification (ii) Formulation of research objectives	(i) Identify the problem related to safety and health matter faced in any sectors or industries (ii) Determine the aims, objectives, background of study, scope of study as well as the limitation arisen in the study.
Stage 2: Theoretical study	Literature review	Highlighting previous studies both local and international that further explains the field of study such as the Act, comprehensive definition, situation awareness, factors of accident, control management systems as well as passed literature review that discussed the related field of study from various sectors and industries
Stage 3: Data collection	(i) Selection of research instruments (ii) Collection of data	(i) Self-administrated questionnaire and observation through site visits were planned (ii) Distribute the self-administrated questionnaire to the staff through online Google form format and conduct the site visits
Stage 4: Data and findings	Data analysis	(i) Analyse each sections in the questionnaire by using SPSS

analyzing		(ii) Analyse the findings of site visits
Stage 5: Discussion, conclusion and recommendations	(i) Discuss the findings and concluding the study (ii) Provide recommendations	(i) Discussion and conclusion on the problems, methods and findings (ii) Recommendations based on the suggestions by the respondents to improve the awareness of hazards in workplaces

3.3 DATA COLLECTION METHOD

In general, there are two (2) methods of data collection which is quantitative and qualitative. The differences between the two (2) methods should be clearly understood before choosing a research method. **Table 3.2** shows the differences between these two (2) methods of data collection.

Table 3.2: Differences between Qualitative and Quantitative Research Method

Elements	Qualitative	Quantitative
Purpose	To obtain an in-depth feedback from respondents	Generate statistics allows for generalization
Characteristic	Involves words, inductive reasoning	Involves numbers, deductive reasoning
Instruments of survey	Interview, focus group	Questionnaire, experiment
Sample size	Small, sample is non-representative of the population	Large, sample closely resembles the population
Duration of survey	Longer	Shorter

[Source: Mukesh, Talib and T, 2013]

Mixed research method combines the quantitative and qualitative research methods. This study obtains data based on the primary and secondary data sources. The primary data was gathered by using self-administered questionnaires which to collect mostly quantitative data, supplemented by observations through site visit which to collect qualitative data (Orrow et al., 2012).

Meanwhile the secondary data was resources from internet, newspaper and published material such as journals and books with content material related to the study. These data were collected from April 2018 to June 2018. Perception is seen from the aspect of understanding, knowledge, opinion, acceptance and awareness of the respondents on the aspects of study.

3.3.1 Self-administrated questionnaire

A self-administrated questionnaire was developed and distributed online via Google form format to five hundred thirty eight (538) staff. The questionnaire comprised of four (4) sections, which is section 1, section 2, section 3 and section 4. There is a total of sixty nine (69) items in the questionnaire. The sample of questionnaire is in **Appendix A** and the distribution of items for staff awareness survey on the workplace hazards is in the **Table 3.3**.

Section 1 consists of demographic questions which are pertaining to the respondents' background included gender, race, age, education background, job status, department and years of experience. Section 2 is to test the basic and general knowledge of workplace hazards includes definition, types, act, ergonomic and signage. Section 3 is consists of questions which was formulated to indicate the level of agreement based on the awareness of personal respondent awareness regarding the hazards in the workplace. The questions were grouped into four (4) sub-sections which are policies and procedures, environments and equipment, information and training, and attitudes and

commitments. The last section is section 4 which require respondents to provide a suggestion or recommendation to increase the awareness level of hazards in workplace.

Table 3.3: Distribution of Items for Staff Awareness Survey on the Workplace Hazards

Sections	Aspects	Number of items	Number of questions
Section 1	Demography information	7	1 – 7
Section 2	Knowledge of workplace hazards	20	8 – 27
Section 3	Awareness of workplace hazards:		
	- Policies and procedures	5	28 – 32
	- Environments and equipment	12	33 – 44
	- Information and training	7	45 – 51
	- Attitudes and commitments	16	52 - 67
Section 4	Suggestion and recommendation	2	68 - 69

This questionnaire uses two methods of responding which is using multiple choice questions and five-tier scoring according to Likert Scale. Scoring items of Likert Scale is in the **Table 3.4**.

Table 3.4: Scoring Items of Likert Scale

Scale	Description of scale
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

The pilot study formed the pedestal for the research study. It has been conducted on ten (10) academic and administrative staff to acquire feedback from the potential

respondents about the instructions, questions, terminologies and structure of the questionnaire to iron out any problems of overlap of categories and in order to have good outcome. In the other words, this pilot study was conducted to give the interview a trial run under realistic conditions and to get as much information as possible from the other person about how they interpret and reacted to the questionnaire. Specific comments, suggestions and ideas were looked at thoroughly and taken into consideration for improvement to perfect the questionnaire and filling in any loopholes to ensure that the measures and variables in the questionnaire developed in appropriate manner.

3.3.2 Observation through site visit

An observation through site visit was carried out to identify the awareness of the staff in carrying out their daily routines and tasks. The observation was taken place at the car park areas, elevators, informal learning study areas and offices (Fink, 2013).

3.4 DATA SAMPLING

There are many ways to choose a sample to facilitate researchers to select an appropriate sample of study. Quota sampling method used to select the respondents in the study area. Quota sampling is a non-probability sample where researchers will select people according to the fixed quota. The sample depends on the needs of researchers regardless of the sample (Bhattacherjee, 2012).

Figure 3.2 shows the Raosoft Software (http://www.raosoft.com/samplesize.html) which is software used to estimate the total of sample size as well as the total of the respondents for this study. The sample size is influenced by the population size, margin of error and confidence level (Krejcie and Morgan, 1970) and these factors were assumpted as in **Table 3.5**.

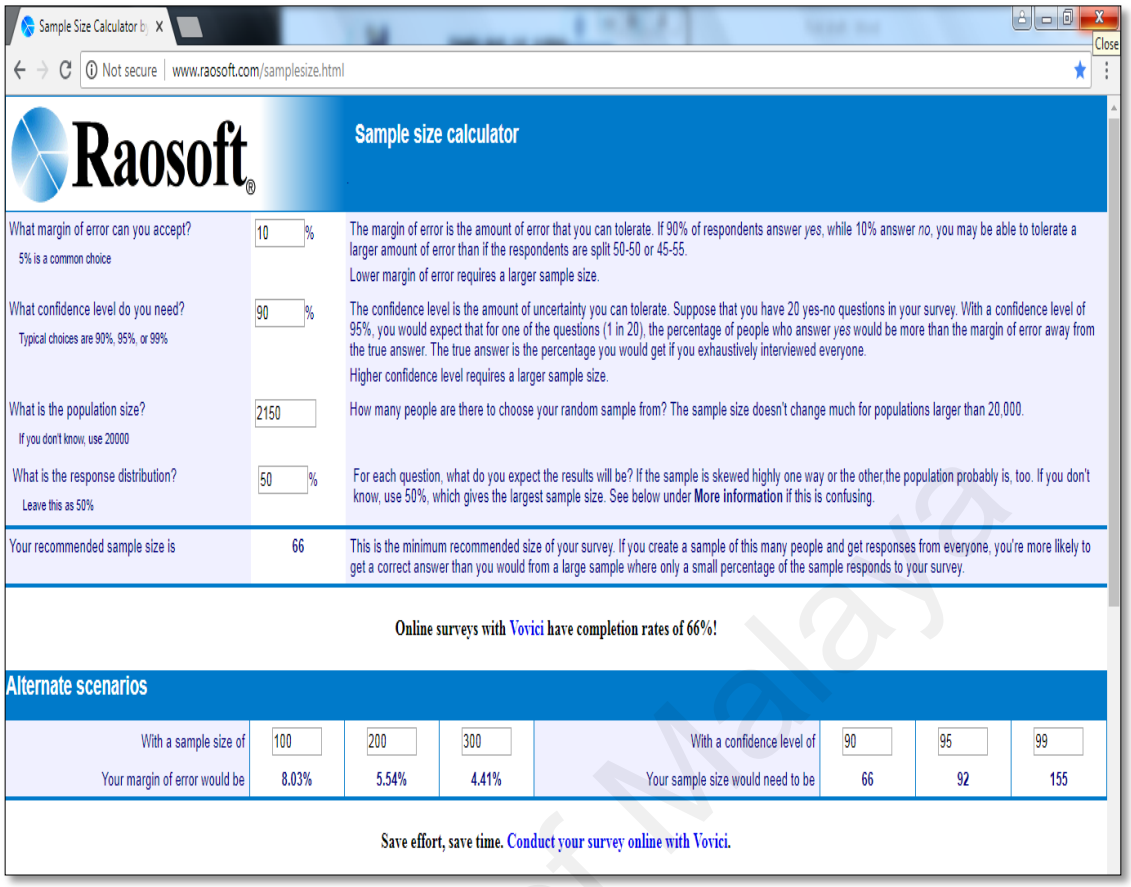


Figure 3.2: Details of the Sample Size Calculation

Table 3.5: The Assumptions Made to Determine Sample Size

Factors in determining sample size	Description of factors	Assumption
Population size	Number of staff in University A	2,150
Margin of error	The plus-or-minus percentages of results obtained	10%
Confidence level	Certainty of the results	90%

[Source: Creative Research System, n.d.; Research Advisors, n.d.]

As assumption, the population size is two thousand one hundred and fifty (2,150) includes the academic and non-academic staff. Hence, the recommended sample size for this study is sixty six (66) with estimated of ten percentages (10%) of sampling error and ninety percentages (90%) of confidence level.

3.5 DATA ANALYSIS METHOD

Data were analyzed using the Statistical Package for Social Science (SPSS). Descriptive analysis methods, which are frequency and percentage, are used to explain respondents' demographics and questions that have the choices of answer, while data related to opinions, suggestions and observation through site visits were qualitatively analyzed. The summary is as in **Table 3.6**.

Table 3.6: Mean Score to Determine the Effectiveness of the Study

Code	Mean score range	Effectiveness level
1	3.68 – 5.00	High
2	2.34 – 3.67	Medium
3	1.00 – 2.33	Low

3.7 CONCLUSION

Research methodology is an important part to guide researchers to conduct a systematic and quality research. The findings and results were analysed from the good data, relevant sampling and useful method will not be argued by the audience and readers because all the results and evidence have been recorded. Indirectly by followed the chosen method strictly, the researchers will obtain the high quality of research and this could be reviewed and referred for future studies.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter will be discussed the findings obtained from the distributed self-administrative questionnaires and through site visits on the staff awareness level on hazards in selected university, namely University A. The data were obtained through self-administrated questionnaire and observation through site visit. Five hundred thirty eight (538) questionnaires distributed and only one hundred (100) had returned. Hence, this analysis is based on one hundred (100) respondents involving the academic and non-academic staff serving in University A.

Data analysis is divided into several parts such as demographic information, knowledge, policies and procedures; environment and equipment; information and training; as well as attitudes and commitments. Furthermore, the observation through site visit was conducted at selective areas such as car park area, elevator, informal learning study area and office. Descriptive analysis methods used are frequency, mean and percentage to explain the findings of the research.

4.2 OBSERVATION THROUGH SITE VISIT

An observation through site visit was carried out to identify the awareness of the staff as well as the management in carrying out the daily routines and tasks. The observation was taken place at the car park area, elevator, informal learning study area and office.

4.2.1 Observation at the car park area

Car park areas are located at the basement i.e. basement 1 and basement 2 for both buildings. These car parks can be loaded up approximate to one hundred and fifteen (115) cars including six (6) parking lots for disable people for each building.

Figure 4.2(b): Elevator - Crowded Density and Overload Passengers inside the Elevator

There are a lot of factors affecting the design of elevator. These include the building population, number of floors, passengers' arrival patterns, number of elevator available and types of building. The quality of elevator service can be determined according to the interval as shown in **Table 4.1.** Generally, the interval should be less than thirty (30) seconds (Jochem, n.d).

Table 4.1: Performance of Elevator based on the Interval

Average interval (s)	Performance of elevator
20 – 25	Excellent
35 – 40	Fair
45	Poor

[Source: Otis, 2012]

Table 4.2: Details of Respondents' Background

No.	Variable		No. of respondents	Percentage (%)
1.	Gender	Female	46	46
		Male	54	54
2.	Race	Chinese	65	65
		Indian	9	9
		Malay	24	24
		Others	2	2
3.	Age	< 25 years old	1	1
		25 - 35 years old	54	54
		36 - 45 years old	34	34
		> 45 years old	11	11
4.	Education background	Secondary school	1	1
		Diploma	6	6
		Bachelor Degree	26	26
		Postgraduate education	67	67
		Others	0	0
5.	Job status	Academic	63	63
		Non-academic	37	37
6.	Departments	Department of Admission, Credit and Evaluation	2	2
		Division of Examinations, Awards and Scholarships	2	2
		Division of Finance	1	1
		Department International Student Services	1	1
		Department of Student Affair	1	1
		Department Safety and Security	3	3

		Department of Soft Skills and Competency	1	1
		Department Laboratory Safety, Management and Administration	8	8
		Institute of Postgraduate Studies and Research	4	4
		Faculty of Accountancy and Management	2	2
		Faculty of Creative Industries	4	4
		Faculty of Engineering and Science	68	68
		Faculty of Medicine and Health Sciences	3	3
7.	Years of Experience	< 5 years	38	38
		5 – 10 years	31	31
		11 – 15 years	14	14
		> 15 years	17	17

4.3.1.1 Gender

Table 4.3 shows the distribution of respondents according to gender which shows 46 (46%) respondents are female and 54 (54%) respondents are male.

Table 4.3: Distribution of Respondents According **to Gender**

Gender	No. of respondents	Percentage (%)
Female	46	46
Male	54	54
Total	**100**	**100**

4.3.1.2 Race

Table 4.4 shows the distribution of respondents according to race which shows 65 (65%) respondents are Chinese, 9 (9%) are Indian, 24 (24%) are Malay and 2 (2%) are others where 1 (1%) is Arabian and 1 (1%) is Sabahan.

Table 4.4: Distribution of Respondents According to Race

Gender	No. of respondents	Percentage (%)
Chinese	65	65
Indian	9	9
Malay	24	24
Others	2	2
Total	**100**	**100**

4.3.1.3 Age

Table 4.5 shows the distribution of respondents according to age. Analysis showed that only 1 (1%) respondent is less than 25 years old. Majority of the respondents which is 54 persons (54%) aged between 25 and 35 years old, while 34 persons (34%) aged between 36 and 45 years old and finally 11 persons (11%) aged 46 years old and above.

Table 4.5: Distribution of Respondents According to Age

Gender	No. of respondents	Percentage (%)
< 25 years old	1	1
25 - 35 years old	54	54
36 - 45 years old	34	34
> 45 years old	11	11
Total	**100**	**100**

4.3.1.4 Education background

Table 4.6 shows the distribution of respondents according to education background. Analysis showed that 1 (1%) respondent has education level at secondary school while

6 (6%) respondents have diploma, 26 (26%) respondents are educated at the bachelor level and 67 (67%) respondents have postgraduate education.

Table 4.6: Distribution of Respondents According to Education Background

Gender	No. of respondents	Percentage (%)
Secondary school	1	1
Diploma	6	6
Bachelor Degree	26	26
Postgraduate education	67	67
Total	**100**	**100**

4.3.1.5 Job status

Table 4.7 shows the frequency and percentage of respondents according to job status where 63 (63%) respondents are academic staff while 37 (37%) respondents are non-academic staff.

Table 4.7: Distribution of Respondents According to Job Status

Gender	No. of respondents	Percentage (%)
Academic	63	63
Non-academic	37	37
Total	**100**	**100**

4.3.1.6 Departments

Table 4.8 shows the frequency and percentage of respondents according to the departments. The results showed that the majority of respondents which 68 persons (68%) are those who work in the Faculty of Engineering and Science. A total of 8 persons (8%) are working in the Department Laboratory Safety, Management and Administration. While 4 persons (4%) where each working in the Institute of Postgraduate Studies and Research; and Faculty of Creative Industries. A total of 3 persons (3%) are working in the Department Safety and Security and 2 persons (2%)

where each working in the Department of Admission, Credit and Evaluation; Division of Examinations, Awards and Scholarships; and Division of Examinations, Awards and Scholarships. Lastly, 1 (1%) respondent who each work in the Division of Finance, Department International Student Services; Department of Student Affair; and Department of Soft Skills and Competency.

Table 4.8: Distribution of Respondents According to Departments

Gender	No. of respondents	Percentage (%)
Department of Admission, Credit and Evaluation	2	2
Division of Examinations, Awards and Scholarships	2	2
Division of Finance	1	1
Department International Student Services	1	1
Department of Student Affair	1	1
Department Safety and Security	3	3
Department of Soft Skills and Competency	1	1
Department Laboratory Safety, Management and Administration	8	8
Institute of Postgraduate Studies and Research	4	4
Faculty of Accountancy and Management	2	2
Faculty of Creative Industries	4	4
Faculty of Engineering and Science	68	68
Total	**100**	**100**

4.3.1.7 Years of experience

Table 4.9 shows the distribution of respondents according to the years of experience. The data analysis showed that the majority of the respondents, 38 persons (38%) were those who served within the five years and below. A total of 31 persons (31%) served

between 5 to 10 years. While 14 persons (14%) served between 11 to 15 years and 17 persons (17%) served more than 15 years.

Table 4.9: Distribution of Respondents According to Years of Experience

Gender	No. of respondents	Percentage (%)
< 5 years	38	38
5 – 10 years	31	31
11 – 15 years	14	14
> 15 years	17	17
Total	**100**	**100**

4.3.2 Section 2: Knowledge of workplace hazards

Respondents were tested on their knowledge and understanding on the topic of study where includes twenty (20) questions covered the definition of hazard, types of hazard, hazards and workplace related acts, signage as well as ergonomic study. The answers for each question are analyzed in the **Table 4.10**.

Table 4.10: Knowledge of Workplace Hazards

Questions and possible answers	No. of respondents	Percentage (%)
Q1. What is hazard?		
A. An unplanned event that results in personal injury or property damage	14	14
B. An unplanned event that does not result in personal injury but may result in property damage or is worthy of recording	1	1
C. Source or situation with a potential for harm in terms of injury or ill health, damage to property, damage to the workplace	83	83

D. Provision of facilities to maintain the health and well-being of individuals at the workplace	2	2
Q2. Chemical is one category of hazard. What can be categorized as a chemical hazard?		
A. Cleaning products	59	59
B. Mold	1	1
C. Temperature	0	0
D. Exposure to radiation	40	40
Q3. Physical is one category of hazard. What can be categorized as a physical hazard?		
A. Heavy lifting	41	41
B. Eye strain	10	10
C. Insect bites	8	8
D. Excessive noise / vibration	41	41
Q4. Electricity is one category of hazards. Which of the following is not the risk of electricity hazards?		
A. Burns	1	1
B. Cuts	60	60
C. Electric shocks	35	35
D. Fire	4	4
Q5. Ergonomic is one category of hazard. What is the possible cause of ergonomic hazard?		
A. Faulty and poorly maintained equipment	17	17
B. Exposure to chemicals	5	5

C. Poor setup computer and office workstation	69	69
D. Lack of physical activities	9	9
Q6. What is the recommended temperature in the office according to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)?		
A. 18 - 19	1	1
B. 20 - 22	13	13
C. 23 - 24	62	62
D. 25 - 26	24	24
Q7. How does photocopier lead to hazard in the office?		
A. Produce ozone gas during operation	2	2
B. Dust from the toners	23	23
C. The fluorescent, metal halide or quartz exposure lamps	14	14
D. All of the above	61	61
Q8. Which of the following is the acronym describing the correct sequence of using a fire extinguisher?		
A. PASS - Pin, Aim, Squeeze, Sweep	7	7
B. PASS - Pull, Aim, Squeeze, Spread	37	37
C. PASS - Pull, Aim, Squeeze, Sweep	52	52
D. PASS - Pull, Accuracy, Squeeze, Spread	4	4
Q9. Personal Protective Equipment (PPE) is an important factor for your safety when working in the laboratory. Which of the following is not fallen into group of PPE in the laboratory?		
A. Lab coat	12	12

B. Gloves	1	1
C. Hi vis vest	81	81
D. Foot protection	6	6
Q10. What is the legal requirement for health and safety in the office?		
A. Control Of Industrial Major Accident Hazards (CIMAH) Regulation 1996	3	3
B. Safety & Health Policy Regulation 1995	82	82
C. Use And Standards Of Exposure Of Chemicals Hazardous To Health) Regulation 2000	7	7
D. Factories And Machinery (Safety, Health And Welfare) Regulations 1970	8	8
Q11. Employers must ensure the safety, health and welfare of their employees. To comply, the employers must:		
A. Provide or maintain equipment and systems of work that are safe and without risk to health	36	36
B. Take reasonable care of the safety and health of one-self and others	7	7
C. Make available information about research and testing	1	1
D. All of the above	56	56
Q12. To comply with OSHA 1994, the employees must:		
A. Maintain their place of work in a safe condition including entrances and exits	5	5
B. Provide clear information about the safe use of their products	1	1
C. Obey environmental health, safety & security rules	23	23

4.3.2.1 Question 1: What is hazard?

The definition of hazard has been questioned to acquire the basic understanding and knowledge of respondents on hazard. The answer for this question is C which is a source or situation with a potential for harm in terms of injury or ill health, damage to property, damage to the workplace. As shown in **Table 4.11**, majority of respondents understand and have knowledge to define hazard where 83 persons (83%) answered correctly while 17 persons (17%) answered incorrectly.

Table 4.11: Distribution of Respondents for Question on the Definition of Hazard

Questions and possible answers	No. of respondents	Percentage (%)
Q1. What is hazard?		
A. An unplanned event that results in personal injury or property damage	14	14
B. An unplanned event that does not result in personal injury but may result in property damage or is worthy of recording	1	1
C. Source or situation with a potential for harm in terms of injury or ill health, damage to property, damage to the workplace	**83**	**83**
D. Provision of facilities to maintain the health and well-being of individuals at the workplace	2	2
Total	**100**	**100**

4.3.2.2 Question 2: Chemical is one category of hazard. What can be categorized as a chemical hazard?

There are many categories of hazard such as chemical hazard. The category of chemical hazard has been questioned to acquire the basic understanding and knowledge

of respondents on the category of chemical hazard. The answer for this question is A which is cleaning products. As shown in **Table 4.12**, majority of respondents understand and have knowledge to categorize the chemical hazards where 59 persons (59%) answered correctly while 41 persons (41%) answered incorrectly.

Table 4.12: Distribution of Respondents for Question on the Category of Chemical Hazard

Questions and possible answers	No. of respondents	Percentage (%)
Q2. Chemical is one category of hazard. What can be categorized as a chemical hazard?		
A. Cleaning products	**59**	**59**
B. Mold	1	1
C. Temperature	0	0
D. Exposure to radiation	40	40
Total	**100**	**100**

4.3.2.3 Question 3: Physical is one category of hazard. What can be categorized as a physical hazard?

There are many categories of hazard such as physical hazard. The category of chemical hazard has been questioned to acquire basic understanding and knowledge of respondents on the category of physical hazard. The answer for this question is D which is excessive noise / vibration. As shown in **Table 4.13** majority of respondents understand and have knowledge to categorize the physical hazards where 59 persons (59%) answered incorrectly while 41 persons (41%) answered correctly.

Table 4.13: Distribution of Respondents for Question on the Category of Physical Hazard

Questions and possible answers	No. of respondents	Percentage (%)
Q3. Physical is one category of hazard. What can be categorized as a physical hazard?		
A. Heavy lifting	41	41
B. Eye strain	10	10
C. Insect bites	8	8
D. Excessive noise / vibration	**41**	**41**
Total	**100**	**100**

4.3.2.4 Question 4: Electricity is one category of hazards. Which of the following is not the risk of electricity hazards?

There are many categories of hazard such as electrical hazard. The category of electrical hazard has been questioned to acquire basic understanding and knowledge of respondents on the category electrical hazard. The answer for this question is C which is cuts. As shown in **Table 4.14**, majority of respondents understand and have knowledge to categorize the electricity hazards where 60 persons (60%) answered correctly while 40 persons (40%) answered incorrectly.

Table 4.14: Distribution of Respondents for Question on the Category of Electricity Hazard

Questions and possible answers	No. of respondents	Percentage (%)
Q4. Electricity is one category of hazards. Which of the following is not the risk of electricity hazards?		
A. Burns	1	1
B. Cuts	**60**	**60**
C. Electric shocks	35	35

D. Fire	4	4
Total	**100**	**100**

4.3.2.5 Question 5: Ergonomic is one category of hazard. What is the possible cause of ergonomic hazard?

There are many categories of hazard such as ergonomic hazard. The category of chemical hazard has been questioned to acquire basic understanding and knowledge of respondents on the category of ergonomic hazard. The answer for this question is C which is poor setup computer and office workstation. As shown in **Table 4.15**, majority of respondents understand and have knowledge to categorize the ergonomic hazards where 69 persons (69%) answered correctly while 31 persons (31%) answered incorrectly.

Table 4.15: Distribution of Respondents for Question on the Category of Ergonomic Hazard

Questions and possible answers	No. of respondents	Percentage (%)
Q5. **Ergonomic is one category of hazard. What is the possible cause of ergonomic hazard?**		
A. Faulty and poorly maintained equipment	17	17
B. Exposure to chemicals	5	5
C. Poor setup computer and office workstation	**69**	**69**
D. Lack of physical activities	9	9
Total	**100**	**100**

4.3.2.6 Question 6: What is the recommended temperature in the office according to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)?

Temperature is an important element to be alerted as to know the recommended temperature in the office might influence the comfortability and performance of the workers. This question has been questioned to acquire basic understanding and knowledge of respondents on the recommended temperature in the office. The answer for this question is C which is 23 ℃ to 24 ℃. As shown in **Table 4.16**, majority of respondents understand and have knowledge on the recommended temperature in the office where 62 persons (62%) answered correctly while 38 persons (38%) answered incorrectly.

Table 4.16: Distribution of Respondents for Question on the Recommended Temperature in the Office According to ASHRAE

Questions and possible answers	No. of respondents	Percentage (%)
Q6. What is the recommended temperature in the office according to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)?		
A. 18 - 19	1	1
B. 20 - 22	13	13
C. 23 - 24	**62**	**62**
D. 25 - 26	24	24
Total	**100**	**100**

4.3.2.7 Question 7: How does photocopier lead to hazard in the office?

Photocopier is basic equipment in the office that benefits worker in process of printing, scanning, faxing and etc. On the other hand, workers must understand that

photocopier also will lead to hazard in the office. This question has been questioned to acquire basic understanding and knowledge of respondents on the possible ways of photocopier leads to hazards in the office. The answer for this question is D which is all of the above. As shown in **Table 4.17**, majority of the respondents understand and have knowledge on the possible ways of photocopier leads to hazard in the office where 61 persons (61%) answered correctly while 39 persons (39%) answered incorrectly.

Table 4.17: Distribution of Respondents for Question on Possible Ways of Photocopier Leads to Hazard in the Office

Questions and possible answers	No. of respondents	Percentage (%)
Q7. How does photocopier lead to hazard in the office?		
A. Produce ozone gas during operation	2	2
B. Dust from the toners	23	23
C. The fluorescent, metal halide or quartz exposure lamps	14	14
D. All of the above	**61**	**61**
Total	**100**	**100**

4.3.2.8 Question 8: Which of the following is the acronym describing the correct sequence of using a fire extinguisher?

Fire extinguisher is safety equipment that must be seen and able to reach in the event of emergency and fire. This question has been questioned to respondents to acquire basic understanding and knowledge of respondents on the correct sequence of using a fire extinguisher. The answer for this question is C which is pull, aim, squeeze and sweep. As shown in **Table 4.18**, majority of the respondents understand and have knowledge on the correct sequence of using a fire extinguisher where 52 persons (52%) answered correctly while 48 persons (48%) answered incorrectly.

Table 4.18: Distribution of Respondents for Question on the Correct Sequence of using a Fire Extinguisher

Questions and possible answers	No. of respondents	Percentage (%)
Q8. Which of the following is the acronym describing the correct sequence of using a fire extinguisher?		
A. PASS - Pin, Aim, Squeeze, Sweep	7	7
B. PASS - Pull, Aim, Squeeze, Spread	37	37
C. PASS - Pull, Aim, Squeeze, Sweep	**52**	**52**
D. PASS - Pull, Accuracy, Squeeze, Spread	4	4
Total	**100**	**100**

4.3.2.9 Question 9: Personal Protective Equipment (PPE) is an important factor for your safety when working in the laboratory. Which of the following is not fallen into group of PPE in the laboratory?

Personal protective equipment is protection equipment or materials that must be use or worn in the laboratory to avoid unnecessary accidents and injuries. This question has been questioned to respondents to acquire basic understanding and knowledge to identify the not related personal protective equipment in the laboratory. The answer for this question is C which is hi vis vest. As shown in **Table 4.19**, majority of the respondents understand and have knowledge to identify the not related personal protective equipment in the laboratory where 81 persons (81%) answered correctly while 19 persons (19%) answered incorrectly.

Table 4.19: Distribution of Respondents for Question on the not Related Personal Protective Equipment (PPE) in the Laboratory

Questions and possible answers	No. of respondents	Percentage (%)

Q9. Personal Protective Equipment (PPE) is an important factor for your safety when working in the laboratory. Which of the following is not fallen into group of PPE in the laboratory?		
A. Lab coat	12	12
B. Gloves	1	1
C. Hi vis vest	**81**	**81**
D. Foot protection	6	6
Total	**100**	**100**

4.3.2.10 Question 10: What is the legal requirement for health and safety in the office?

Legal requirement is a guide and reference to workers in carrying out the duties in safe manners. This question has been questioned to respondents to acquire basic understanding and knowledge to identify the related legal requirement for health and safety in the office. The answer for this question is B which is Safety & Health Policy Regulation 1995. As shown in **Table 4.20**, majority of the respondents understand and have knowledge identify the related legal requirement for health and safety in the office where 82 persons (82%) answered correctly while 18 persons (18%) answered incorrectly.

Table 4.20: Distribution of Respondents for Question on the Legal Requirement for Health and Safety in the Office

Questions and possible answers	No. of respondents	Percentage (%)
Q10. What is the legal requirement for health and safety in the office?		
A. Control Of Industrial Major Accident Hazards (CIMAH) Regulation 1996	3	3

B. Safety & Health Policy Regulation 1995	**82**	**82**
C. Use And Standards Of Exposure Of Chemicals Hazardous To Health) Regulation 2000	7	7
D. Factories And Machinery (Safety, Health And Welfare) Regulations 1970	8	8
Total	**100**	**100**

4.3.2.11 Question 11: Employers must ensure the safety, health and welfare of their employees. To comply, the employers must:

Occupational Safety and Health Act 1994 (Act 514) has outlined the responsible of employers to ensure the safety, health and welfare of the employees. This question has been questioned to respondents to acquire basic understanding and knowledge to identify the responsibility of employer to ensure the safety, health and welfare of the employees. The answer for this question is A which is provide or maintain equipment and systems of work that are safe and without risk to health. As shown in **Table 4.21**, majority of the respondents were not understood and do not have knowledge to identify the responsibility of employer to ensure the safety, health and welfare of the employees where 64 persons (64%) answered incorrectly while 36 persons (36%) answered correctly.

Table 4.21: Distribution of Respondents for Question on the Responsible of Employer to Ensure the Safety, Health and Welfare of Their Employees According to OSHA 1994

Questions and possible answers	No. of respondents	Percentage (%)
Q11. Employers must ensure the safety, health and welfare of their employees. To comply, the employers must:		

A. Provide or maintain equipment and systems of work that are safe and without risk to health	**36**	**36**
B. Take reasonable care of the safety and health of one-self and others	7	7
C. Make available information about research and testing	1	1
D. All of the above	56	56
Total	**100**	**100**

4.3.2.12 Question 12: To comply with OSHA 1994, the employees must:

Occupational Safety and Health Act 1994 (Act 514) has outlined the responsible of employees in the workplace. This question has been questioned to respondents to acquire basic understanding and knowledge to identify the responsible of employees in the workplace. The answer for this question is C which is obeying environmental health, safety & security rules. As shown in **Table 4.22**, majority of the respondents were not understood and do not have knowledge to identify the responsible of employees in the workplace where 77 persons (77%) answered incorrectly while 23 persons (23%) answered correctly.

Table 4.22: Distribution of Respondents for Question on the Responsible of Employees in the Workplace According to OSHA 1994

Questions and possible answers	No. of respondents	Percentage (%)
Q12. To comply with OSHA 1994, the employees must:		
A. Maintain their place of work in a safe condition including entrances and exits	5	5
B. Provide clear information about the safe use of their products	1	1

C. Obey environmental health, safety & security rules	**23**	**23**
D. All of the above	71	71
Total	**100**	**100**

4.3.2.13 Question 13: What are basic colours used on safety signboards?

Basic colour used on safety signboards are the colours to which specific the meaning is assigned that provides information on instructions about safety or health at work by a combination of shape, symbol or pictogram. These basic colours are red which refer to prohibition, yellow which refer to caution, green which reefer to positive actions and blue which refer to mandatory actions. This question has been questioned to respondents to acquire basic understanding and knowledge to identify the basic colours used on the safety signboards. The answer for this question is A which is red, yellow, green and blue. As shown in **Table 4.23**, majority of respondents understand and have knowledge to identify the basic colours used on the safety signboards where 86 persons (86%) answered correctly while 14 persons (14%) answered incorrectly.

Table 4.23: Distribution of Respondents for Question on the Basic Colours used on Safety Signboards

Questions and possible answers	No. of respondents	Percentage (%)
Q13. What are basic colours used on safety signboards?		
A. Red, yellow, green, blue	**86**	**86**
B. Red, yellow, pink, blue	2	2
C. Red, black, amber, blue	6	6
D. Red, yellow, green, grey	6	6

Total	**100**	**100**

4.3.2.14 Question 14: What is the best method to prevent mosquito breeding?

Mosquito is one of dangerous insects in the world that carrying diseases such Zika Virus and kills one million people in a year (Bates, 2016). This question has been questioned to respondents to acquire basic understanding and knowledge to identify the best method in order to prevent mosquito breeding. The answer for this question is D which is eliminating water stagnant. As shown in **Table 4.24**, majority of the respondents able to identify the best method in order to prevent mosquito breeding where 85 persons (85%) answered correctly while 15 persons (15%) answered incorrectly.

Table 4.24: Distribution of Respondents for Question on the Best Method to Prevent Mosquito Breeding

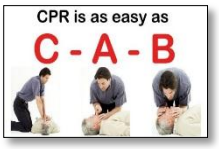
Questions and possible answers	No. of respondents	Percentage (%)
Q14. What is the best method to prevent mosquito breeding?		
A. Fogging	11	11
B. Mosquito net	3	3
C. Larvae seed	1	1
D. Eliminate water stagnant	**85**	**85**
Total	**100**	**100**

4.3.2.15 Question 15: What does C-A-B in the below sign stand for?

In the event of unconsciousness of victims, the first aider must know the steps and rules in performing the cardiopulmonary resuscitation (CPR). This question has been

questioned to respondents to acquire basic understanding and knowledge to define the acronym of CAB in CPR. The answer for this question is C which is compression, airway and breathing. As shown in **Table 4.25**, majority of the respondents understand and have knowledge to define the acronym of CAB in CPR where 86 persons (86%) answered correctly while 14 persons (14%) answered incorrectly.

Table 4.25: Distribution of Respondents for Question on Definition of C-A-B in the Cardiopulmonary Resuscitation (CPR)

Questions and possible answers	No. of respondents	Percentage (%)
Q15. What does C-A-B in the below sign stand for? 		
A. Compression-And-Breathe	6	6
B. Collaborate-Air-Breathe	2	2
C. Compression-Airway-Breathing	**86**	**86**
D. Compression-Action-Breathing	6	6
Total	**100**	**100**

4.3.2.16 Question 16: What does the following signage indicate?

Safety signage warns of workplace hazard and instructs the employees the proper precautions to take to avoid accidents and injuries. This question has been questioned to respondents to acquire basic understanding and knowledge to identify the indicated safety signage. The answer for this question is D which is lab coats must be worn in this area. As shown in **Table 4.26**, majority of the respondents understand and have knowledge to identify the indicated safety signage where 93 persons (93%) answered correctly while 7 persons (7%) answered incorrectly.

3.	Physical is one category of hazard What can be categorized as a physical hazard?	41	41%	**59**	**59%**
4.	Electricity is one category of hazards. Which of the following is not the risk of electricity hazards?	**60**	**60%**	40	40%
5.	Ergonomic is one category of hazard. What is the possible cause of ergonomic hazard?	**69**	**69%**	31	31%
6.	What is the recommended temperature in the office according to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)?	**62**	**62%**	38	38%
7.	How does photocopier lead to hazard in the office?	**61**	**61%**	39	39%
8.	Which of the following is the acronym describing the correct sequence of using a fire extinguisher?	**52**	**52%**	48	48%
9.	Personal Protective Equipment (PPE) is an important factor for your safety when working in the laboratory. Which of the following is not fallen into group of PPE in the laboratory?	**81**	**81%**	19	19%
10.	What is the legal requirement for health and safety in the office?	**82**	**82%**	18	18%
11.	Employers must ensure the safety, health and welfare of their employees. To comply, the employers must:	36	36%	**64**	**64%**
12.	To comply with OSHA 1994, the	23	23%	**77**	**77%**

Total	Correct answer	Incorrect answer
	16 questions (80%)	4 questions (20%)

Based on the range targeted for multiple questions in **Table 4.32**, the 53 respondents have a good knowledge while 47 respondents have a normal knowledge in the aspect of study.

Table 4.32: Range Targeted for Multiple Questions

Range	Description of range
0 - 6	Poor
7 - 13	Normal
14 - 20	Good

4.3.3 Section 3: Factors determine the level of awareness on hazards in workplace

This section explains the factors that determine the staff awareness on hazards in University A. Discussion covered the policies and procedures; environment and equipment; information and training as well as information and training.

4.3.3.1 Policies and procedures

Table 4.33 shows the frequency distribution and mean score of respondents' perception for policies and procedures. The overall mean score for this section is 3.95. This shows the respondents' awareness on policies and procedures is high.

Table 4.33: Frequency Distribution and Mean Score of Respondents' Perceptions on Policies and Procedures

No.	Variables	#	SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean score

1.	My workplace has a clear written and noticeable Safety and Health Policy	**(f)**	2	5	**24**	**45**	24	3.84
2.	My workplace ensures that company procedures, policies and guidelines are clear and accessible to the workers	**(f)**	2	2	**25**	**44**	27	3.92
3.	My workplace establish clear roles and responsibilities to their workers to avoid stress and depression where occurred when people are subjected to demands and expectations that are out of keeping their needs, abilities, skills and coping strategies	**(f)**	3	10	**32**	**39**	16	3.55
4.	My workplace posted the emergency evacuation route and action plan for employees' reference and action	**(f)**	1	2	10	**50**	37	4.20
5.	I always obey the safety rules and I am aware that my failure to comply with safety rules may result in injury to me, student and my colleague	**(f)**	0	1	10	**51**	38	4.26
Overall mean score								**3.95**

4.3.3.2 Environment and equipment

Table 4.34 shows the frequency distribution and mean score of respondents' perception for environment and equipment. The overall mean score for this section is 3.67. This shows the respondents' awareness on environment and equipment is high.

Table 4.34: Frequency Distribution and Mean Score of Respondents' Perceptions on Environment and Equipment

No.	Variables	#	SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean score
1.	My workplace has the floor marking	**(f)**	3	7	**16**	**48**	26	3.87

	at the specific areas for the specific indication e.g. dangerous machine; especially in the laboratory							
2.	My workplace exposes me to potential infectious substances, toxic natural substances (e.g. plants, gases) or toxic concentrations of chemicals (e.g. skin, inhalation, ingestion)	**(f)**	18	21	**17**	27	17	3.04
3.	My workplace is free from visible fungal / mold growth and associated odors	**(f)**	3	12	**31**	**39**	15	3.51
4.	My workplace provides adequate lighting in work areas and walkaways	**(f)**	0	3	16	**54**	27	4.05
5.	My workplace make sure that walking and driving paths are clear and free of obstructions	**(f)**	1	9	**20**	**52**	18	3.77
6.	My workplace provides sufficient parking lot area that free of any safety concern e.g. uneven pavement, bad lighting and etc	**(f)**	16	**26**	**22**	28	8	2.86
7.	My workplace ensures that their employees have a good condition and ergonomic furniture and equipment to perform their jobs	**(f)**	4	18	**36**	33	9	3.25
8.	My workplace provides adequate number and type of fire extinguisher where properly inspected, refilled and inspected	**(f)**	0	1	17	**52**	30	4.11
9.	I know how to use the fire extinguisher	**(f)**	3	10	**24**	**40**	23	3.70
10.	I can identify the sources of hazards at my workstation and their effects on me	**(f)**	0	9	**19**	**57**	15	3.78
11.	I can identify the location of more	**(f)**	0	4	9	**55**	32	4.15

	than one emergency exits and route to the assembly location in the event of fire emergency							
12.	If I notice a workplace hazard, I would point it out to the management	**(f)**	0	3	**22**	**52**	23	3.95
Overall mean score								**3.67**

4.3.3.3 Information and training

Table 4.35 shows the frequency distribution and mean score of respondents' perception for information and training. The overall mean score for this section is 4.10. This shows the respondents' awareness on information and training is high.

Table 4.35: Frequency Distribution and Mean Score of Respondents' Perceptions on Information and Training

No.	Variables	#	SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean score
1.	My workplace has proper storage and labeling system especially in the laboratory	**(f)**	0	0	25	**50**	25	4.00
2.	My workplace provides safety and health training to the workers	**(f)**	0	3	19	**49**	29	4.04
3.	I am aware that safety and health training e.g. first aid training; is an important	**(f)**	0	1	6	**49**	44	4.36
4.	I have attended or will be attending any safety and health training provided at my workplace	**(f)**	4	7	**20**	**41**	28	3.82
5.	I share knowledge and information associated with safety and health with colleagues	**(f)**	1	9	**24**	**45**	21	3.76
6.	I know that desks and chairs must be adjusted ergonomically	**(f)**	0	1	6	**62**	31	4.23

7.	I know that pushing or pulling objects that are too heavy or carried incorrectly can cause back problems or problems in other parts of the body	**(f)**	0	0	3	**47**	50	4.47
Overall mean score								**4.10**

4.3.3.4 Attitudes and commitments

Table 4.36 shows the frequency distribution and mean score of respondents' perception for attitudes and commitments. The overall mean score for this section is 4.01. This shows the respondents' awareness on attitudes and commitments is high

Table 4.36: Frequency Distribution and Mean Score of Respondents' Perceptions on Attitudes and Commitments

No.	Variables	#	SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean score
1.	My workplace has a safety committee / safety representative(s)	**(f)**	0	0	7	**47**	46	4.39
2.	My workplace provides first aid services e.g. first aider, first aid box and first aid room	**(f)**	0	3	6	**52**	39	4.27
3.	My workplace performs periodic maintains / inspects the first aid facilities	**(f)**	1	0	16	**49**	34	4.15
4.	My workplace has sufficient evacuation, emergency and rescue planning and facilities	**(f)**	0	3	13	**54**	30	4.11
5.	My workplace has competent persons trained to ensure the safe evacuation of all persons from buildings in the event of serious and imminent dangers	**(f)**	0	2	23	**47**	28	4.01
6.	My workplace provides a safe and adequate disposal systems especially	**(f)**	0	1	17	**55**	27	4.08

	in the laboratory							
7.	I have a very positive attitude and good understanding of my rights and responsibilities in relation to workplace health and safety	**(f)**	0	2	14	**53**	31	4.13
8.	I have a mindset that safety in workplace is an important issue that every worker must understand and is aware of	**(f)**	0	0	6	**53**	41	4.35
9.	I know who in my department to contact in case of any emergency	**(f)**	1	1	12	**54**	32	4.15
10.	I never stand on a table, counter or chair when reaching for items overhead	**(f)**	2	6	**24**	**40**	28	3.86
11.	I do not overload top drawers and create a top heavy file cabinet that would topple	**(f)**	0	2	15	**56**	27	4.08
12.	I do not litter and I throw rubbish according to the provided categories of dustbin	**(f)**	2	0	8	**52**	38	4.24
13.	I always take regular breaks to stretch, change gesture and rest my eyes	**(f)**	0	10	**21**	**50**	19	3.78
14.	I practice housekeeping at my workstation	**(f)**	0	2	14	**59**	25	4.07
15.	I do not feel stress and burden performing my daily routine as well as add hock tasks given to me	**(f)**	5	14	**27**	39	15	3.45
16.	I always work alone after my standard working hours	**(f)**	12	22	**24**	29	13	3.09
Overall mean score								**4.01**

4.3.4 Section 4: Recommendations and suggestions

This section highlighted the suggestions and recommendations by the respondents as the employee to improve the awareness of hazards in workplace. The suggestions and recommendations are as follows:

(i) Attending training or seminar related to hazards at workplace

(ii) Encourage colleagues to attend training

(iii) Work and cooperate with the employer to highlight new hazards and research findings

(iv) Understand the hazards around and share the importance and how to improve of safety with colleagues

(v) Brief students before starting the lab session

(vi) More careful and be alert on surrounding and work procedures

(vii) To be more cautions and self-improvement to learn and read more about workplace hazards

(viii) Teamwork to clean up workplace

(ix) Identify hazards in the workplace and take steps to eliminate or minimize it

(x) Be more observant

(xi) Learn mindfulness skills which mean awareness of present moment

(xii) Comply with rules and regulations

(xiii) Check first aid kits and replace necessary aids in every month

(xiv) Using checklists, memory aids, developing a habit of triple-checking things or simply asking a co-worker to inspect on their works

In addition, the respondents also have highlighted some suggestions and recommendations for the employer in order to improve the awareness of hazards in workplace. The suggestions and recommendations are as follows:

(i) Arrange and conduct proper training / seminar / workshop / campaign / talk / roadshow to educate and create awareness; and make it compulsory for all staff including top management

(ii) To conduct meetings to discuss and share knowledge on safety issues

(iii) Promote housekeeping and workplace ergonomics

(iv) Provide a good and ergonomic office furniture, tools, machines and equipment

(v) Place up and share safety related notice, news, signage and poster

(vi) Provide needed resources to be safe and considering to employ occupational physician and counselor on staff welfare

(vii) Encourage and sponsor staff to attend safety related training so that more licensed safety officers can be produced

(viii) Enable online reporting of potential hazards and create suggestion page

(ix) Distributed safety manual to all staff

(x) Encourage staff to perform exercise

(xi) Provide more working space to create nice and confortable environment to perform daily jobs

(xii) Make sure all employees know the value of a clean work space and encourage them to keep it clean

(xiii) Get authorities to visit and inspect the workplace

(xiv) Make safety a key part of the business

(xv) Provide mindfulness skill training to all staff

(xvi) Revise safety rules to make it relevant

(xvii) To look into mental health not only physical health

(xviii) Provide practical training to train employees to deal with dangers

(xix) Regular inspection and improve maintenance on machines and equipment

(xx) Compulsory for employees to attend first aid training

(xxi) Implementing OSHA rules and regulations

(xxii) Have a clear punish and reward systems

(xxiii) Improve the quality of elevator as always got cases that passengers trapped in it

(xxiv) Provide more parking spaces

4.4 DISCUSSION

As observation conducted and carried out at the selective areas such as car park area, elevator, informal learning spaces and office, it is found that the car park areas at the basements have unclear and not durable driveway line; there are no pedestrian walkways and pedestrian crossing marking on the road; and no clear signage for direction and driveway parameter. Further to the elevator areas, it is found that there is a long waiting queue of students and staff at the lobby area as well as crowded density and overloaded passengers inside the elevators. Next to the informal learning spaces, it is found that University A has provided the variety and sufficient table sizes, arrangement and background atmosphere for each level in the building. However, the brightness of lighting lux is insufficient for users' convenience. Following to the office areas, it is found that unorganized photocopier and trolley; and unguarded cutter and binding at the entrance, as well as the running wires across the floor and; disorganized and dirty work space.

A self-administrated questionnaire has been constructed and distributed to acquire the information and perception of the staff in the aspect of study. This questionnaire is divided into four (4) sections which is section 1, section 2, section 3 and section 4. Section one (1) consist of demographic information, section two (2) consist of knowledge of hazards in workplace, section three (3) consist of awareness factors in determining the awareness level and last but not least, section four (4) consist of

suggestion or recommendation to increase the awareness level of hazards in workplace. In overall, the knowledge and awareness of staff in University A is good and high as data established in section two (2) and section three (3).

Even though the knowledge and awareness of staff in University A is good and high but there are still a space for improvement to increase the level of awareness towards hazards in workplace. The respondents as an employee in overall are willing to attend all related safety and health training and; be more careful and alert on surrounding and work procedures. In addition, the respondents have highlighted several suggestions and recommendations for the employer in order to improve the awareness of hazards in workplace such arrange and provide proper training / seminar / workshop / campaign / talk / roadshow to educate and create awareness; and make it compulsory for all staff including top management as well as practical training to train employees to deal with dangers. Furthermore, the respondents are expecting the employer to provide more working space to create comfortable, nice and safe environment to perform their jobs and to establish improvement to the elevator and parking area facilities provided for better learning environment and users' productivities.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

This chapter will discuss on the findings, discussion, conclusion and recommendation of the study. The aim of this study is to assess and investigate the awareness level among the staff in the selected university, namely University A in performing their daily routines. The first objective of this study is to assess the understanding of staff towards hazards in workplace. Second objective is to investigate the awareness level of staff towards hazards in workplace. The third objective is to determine the dominant factors affecting the awareness level of staff in the aspect of hazards in workplace and the last objective is to propose preventive measures and management practice to promote awareness of hazards in workplace.

5.2 CONCLUSION

The respondents of this study are the academic and non-academic staff in University A, located in Selangor Darul Ehsan. A total of hundred (100) out of five hundred thirty eight (538) staff were completed the self-administrated questionnaire which conducted online through Google form. Statistical Package for Social Science (SPSS) has been used to analyse collected data. Descriptive data such as frequency, mean and percentage were used to explain the respondents' demographic and factors that determine the staff awareness level on the hazards in workplace. Generally, among those who participated, 54% are male, 65% are Chinese, 63% are holding a post of academician, 67% has postgraduate education, most (54%) of the respondents are in the range 25 to 35 years old, 68% are from faculty of engineering and science and vast majority respondents (38%) working less than 5 years.

In overall, this study shows that the staff awareness level at University A towards hazards in workplace is high. The results were analysed based on findings through self-

administrative questionnaires and observation through site visit. A total of twenty (20) multiple questions were constructed to assess the basic understanding and knowledge of the respondents. More than 50% of respondents were answered 16 (80%) questions correctly and more than 50% respondents were answered 4 (20%) questions incorrectly which includes question on types of physical hazards where 41 respondents answered correctly and 59 respondents answered incorrectly, responsibility of employers according to Occupational Safety and Health Act (OSHA) 1994 where 36 respondents answered correctly and 64 respondents answered incorrectly, responsibility of employees according to Occupational Safety and Health Act (OSHA) 1994 where 23 respondents answered correctly and 77 respondents answered incorrectly; and signage indication where 28 respondents answered correctly and 72 respondents answered incorrectly as respondents were confused on the signage colour of caution, danger, notice and warning.

A total of forty (40) open-ended questions were constructed based on four (4) factors to determining the awareness level of respondent on the aspect of study which are policies and procedures; environment and equipment; information and training; and attitudes and commitments. The overall mean score for policies and procedures is 3.95; environment and equipment is 3.67; information and training is 4.10; and attitudes and commitments is 4.01. This shows that staff in University A has a very high awareness on the information and training of hazards in workplace and slightly high awareness on the environment and equipment of hazards in workplace.

The respondents, for policies and procedures, always obey safety rules and aware that failure to comply with safety rules may result in injury to themselves, colleagues and students. In addition, the respondents are not clear with their roles and responsibilities to which may lead to stress and depression where people are subjected

to demands and expectations that are out of keeping their needs, abilities, skills and coping strategies.

Besides, for environment and equipment, the respondents can identify the location of more than one emergency exits and route to the assembly location in the event of fire emergency; and respondents agreed that employer did not provide sufficient parking lot area that free of any safety concern i.e. uneven pavement, bad lighting and etc.

Moreover, for information and training, the respondents know and aware that pushing or pulling objects that are too heavy or carried incorrectly can cause back problems or problems in other parts of the body. In addition, the respondents are not sharing knowledge and information associated with safety and health with their colleagues. Furthermore, for attitudes and commitments, the respondents aware that the workplace has a safety committee and safety representative(s) and the respondents always working alone after standard working hours.

This finding is important to show the awareness level on hazards and its role in shaping safety culture. Minimizing or eliminating workplace hazards need not be time-consuming or even expensive. Being aware of possible hazards can increase productivity, prevent illness, reduce days off and save lives.

The creation of safe and sound workplace is not the responsibility of the employer only. Employees also have to take part in order to keep their workplace free from any danger of risks and hazards. Therefore, most of the common accidents at workplace should be prevented with the cooperation from both employer and employees considering it as their responsibility to prevent accidents at their workplace.

Employers are required to perform risk assessment for possible accidents that would occur and adapt necessary methods to prevent accidents in the health and safety procedures provided by them. Employees then must strictly follow the health and safety

measures adapted by their employers and help to avoid accidents at workplace to ensure that they can run the operation effectively and efficiently.

5.3 RECOMMENDATION

Based on the findings, it is found that the level of respondents' awareness on hazard in workplace is high. However, in order to improve staff awareness towards hazard in workplace in overall, the top management should consider the major suggestions and recommendations addressed by the respondents as following:

(i) Arrange and provide proper training / seminar / workshop / campaign / talk / roadshow to educate and create awareness; and make it compulsory for all staff including top management

(ii) Provide practical training to train employees to deal with dangers

(iii) Safety policies and procedures must be well explained; and safety manual must be distributed to all employees

(iv) Place up and share safety related notice, news, signage and poster

(v) Establish improvement to the elevator and parking area facilities provided for better learning environment and users' productivities.

(vi) Provide good and ergonomic office furniture, tools, machines and equipment

(vii) Regular inspection and improve maintenance on machines and equipment

(viii) Provide more working space to create comfortable, nice and safe environment to perform the jobs

(ix) Have a clear punish and reward or incentives systems for employees' safe behaviour

In addition, future research could be conducted to study in deep on the same or similar topic of study by considering the following:

(i) Conducting the same study by using another data collection such as interview where it will give a real sense of the question asked to the respondents and the answers given are more accurate

(ii) Improve the quality and level of assessment in the questionnaire

(iii) Conduct comparative studies with other institutions i.e. private and public to understand the level of staff awareness towards hazard in workplace so that the findings demonstrate the reality of real consciousness

(iv) As this study focuses only on aspects hazards in workplace, future study can examine other aspects of safety and health more deep such the impact of occupational activity on the health of the employees

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APPENDIX A: SAMPLE OF QUESTIONNAIRE

Invitation to Participate in Survey on Awareness of Workplace Hazards in Selected University's Staff

I would like to seek your kind support to participate in a research study to evaluate and investigate understanding and awareness level of hazards in workplace in selected university's staff. This research study would serve as partial fulfillment of my Master of Engineering (Safety, Health and Environment).

Please click the link for the survey: https://docs.google.com/forms/d/e/1FAIpQLSd-JdCz0cToZubJplHLqbveS2l72ywPa7vFe6jlCdzIqyTG-w/viewform

The questionnaire will only take approximately 10 minutes of your time. Please respond to the questions based on your genuine opinions and experiences. Your kind participation in this study is highly appreciated. Please be informed that all the information provided in this questionnaire would be strictly treated as confidential and only be used for research purpose.

Thank you for your time and patience in answering all the questions. Should you require further information about this questionnaire, please feel free to contact me.

Best regards,
Norhidayah Binti Nazari (KGJ150032)
n.hidayah4@siswa.um.edu.my
Master of Engineering (Safety, Health and Environment)
Faculty of Engineering
University of Malaya

PART 1: DEMOGRAPHY INFORMATION
(Please tick (√) where applicable)

1.1 Personal details:

Gender:
☐ Female ☐ Male

Race:
☐ Chinese ☐ Indian ☐ Malay ☐ Others

Age:
☐ < 25 years old ☐ 25 - 35 years old ☐ 36 - 45 years old ☐ > 45 years old

Education background:
☐ Secondary school ☐ Diploma ☐ Bachelor Degree ☐ Postgraduate education ☐ Others

1.2 Working Details:

Job status:

☐ Academic ☐ Non academic

Department:

_____

Years of Experience:

☐ < 5 years ☐ 5 – 10 years ☐ 11 – 15 years ☐ > 15 years

_____

PART 2: KNOWLEDGE OF WORKPLACE HAZARDS

(Please tick (√) once for each question)

Q1) What is hazard?

A	An unplanned event that results in personal injury or property damage
B	An unplanned event that does not result in personal injury but may result in property damage or is worthy of recording
C	Source or situation with a potential for harm in terms of injury or ill health, damage to property, damage to the workplace
D	Provision of facilities to maintain the health and well-being of individuals at the workplace

Q2) Chemical is one category of hazard. What can be categorized as a chemical hazard?

A	Cleaning products
B	Mold
C	Temperature
D	Exposure to radiation

Q3) Physical is one category of hazard. What can be categorized as a physical hazard?

A	Heavy lifting
B	Eye strain
C	Insect bites
D	Excessive noise/vibration

Q4) Electricity is one category of hazards. Which of the following is not the risk of electricity hazards?

A	Burns
B	Cuts
C	Electric shocks
D	Fire

Q5) Ergonomic is one category of hazard. What is the possible cause of ergonomic hazard?

A	Faulty and poorly maintained equipment
B	Exposure to chemicals
C	Poor setup computer and office workstation

D Lack of physical activities

Q6) What is the recommended temperature in the office according to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)?

A 18 - 19 B 20 - 22 **C** 23 - 24 D 25 - 26

Q7) How does photocopier lead to hazard in the office?

A Produce ozone gas during operation
B Dust from the toners
C The fluorescent, metal halide or quartz exposure lamps
D All of the above

Q8) Which of the following is the acronym describing the correct sequence of using a fire extinguisher?

A PASS - Pin, Aim, Squeeze, Sweep
B PASS - Pull, Aim, Squeeze, Spread
C PASS - Pull, Aim, Squeeze, Sweep
D PASS - Pull, Accuracy, Squeeze, Spread

Q9) Personal Protective Equipment (PPE) is an important factor for your safety when working in the laboratory. Which of the following is not fallen into group of PPE in the laboratory?

A Lab coat
B Gloves
C Hi vis vest
D Foot protection

Q10) What is the legal requirements for health and safety in the office?

A Control Of Industrial Major Accident Hazards (CIMAH) Regulation 1996
B Safety & Health Policy Regulation 1995
C Use And Standards Of Exposure Of Chemicals Hazardous To Health) Regulation 2000
D Factories And Machinery (Safety, Health And Welfare) Regulations 1970

Q11) Employers must ensure the safety, health and welfare of their employees. To comply, the employers must:

A Provide or maintain equipment and systems of work that are safe and without risk to health
B Take reasonable care of the safety and health of one-self and others
C Make available information about research and testing
D All of the above

Q12) To comply with OSHA 1994, the employees must:

A Maintain their place of work in a safe condition including entrances and exits
B Provide clear information about the safe use of their products
C Obey environmental health, safety & security rules
D All of the above

Q13) What are basic colours used on safety signboards?

A Red, yellow, green, blue
B Red, yellow, pink, blue

PART 3: AWARENESS OF WORKPLACE HAZARDS

Please tick (√) on the box that most accurately reflects the importance of the value of each description. Please tell us how far you agree with the statement using five-point scale:

1 - Strongly Disagree; 2 - Disagree; 3 - Neutral; 4 - Agree; 5 - Strongly Agree

No.	Description	1	2	3	4	5
Policies and procedures:						
1.	My workplace has a clear written and noticeable Safety and Health Policy.					
2.	My workplace ensures that company procedures, policies and guidelines are clear and accessible to the workers.					
3.	My workplace establish clear roles and responsibilities to their workers to avoid stress and depression where occurred when people are subjected to demands and expectations that are out of keeping their needs, abilities, skills and coping strategies.					
4.	My workplace posted the emergency evacuation route and action plan for employees' reference and action.					
5.	I always obey the safety rules and I am aware that my failure to comply with safety rules may result in injury to me, student and my colleague.					
Environment and equipment:						
1.	My workplace has the floor marking at the specific areas for the specific indication e.g. dangerous machine; especially in the laboratory.					
2.	My workplace exposes me to potential infectious substances, toxic natural substances (e.g. plants, gases) or toxic concentrations of chemicals (e.g. skin, inhalation, ingestion)					
3.	My workplace is free from visible fungal / mold growth and associated odors.					
4.	My workplace provides adequate lighting in work areas and walkaways.					
5.	My workplace makes sure that walking and driving paths are clear and free of obstructions.					
6.	My workplace provides sufficient parking lot area that free of any safety concern e.g. uneven pavement, bad lighting and etc.					
7.	My workplace ensures that their employees have a good condition and ergonomic furniture and equipment to perform their jobs.					
8.	My workplace provides adequate number and type of fire extinguisher where properly inspected, refilled and inspected.					
9.	I know how to use the fire extinguisher.					
10.	I can identify the sources of hazards at my workstation and their effects on me.					
11.	I can identify the location of more than one emergency exits and route to the assembly location in the event of fire emergency.					
12.	If I notice a workplace hazard, I would point it out to the management.					
Information and training:						
1.	My workplace has proper storage and labeling system especially in					

	the laboratory.					
2.	My workplace provides safety and health training to the workers.					
3.	I am aware that safety and health training e.g. first aid training; is an important.					
4.	I have attended or will be attending any safety and health training provided at my workplace.					
5.	I share knowledge and information associated with safety and health with colleagues.					
6.	I know that desks and chairs must be adjusted ergonomically.					
7.	I know that pushing or pulling objects that are too heavy or carried incorrectly can cause back problems or problems in other parts of the body.					
Attitudes and commitments:						
1.	My workplace has a safety committee / safety representative(s).					
2.	My workplace provides first aid services e.g. first aider, first aid box and first aid room.					
3.	My workplace performs periodic maintains / inspects the first aid facilities.					
4.	My workplace has sufficient evacuation, emergency and rescue planning and facilities.					
5.	My workplace has competent persons trained to ensure the safe evacuation of all persons from buildings in the event of serious and imminent dangers.					
6.	My workplace provides safe and adequate disposal systems especially in the laboratory.					
7.	I have a very positive attitude and good understanding of my rights and responsibilities in relation to workplace health and safety.					
8.	I have a mindset that safety in workplace is an important issue that every worker must understand and is aware of.					
9.	I know who in my department to contact in case of any emergency.					
10.	I never stand on a table, counter or chair when reaching for items overhead.					
11.	I do not overload top drawers and create a top heavy file cabinet that would topple.					
12.	I do not litter and I throw rubbish according to the provided categories of dustbin.					
13.	I always take regular breaks to stretch, change gesture and rest my eyes.					
14.	I practice housekeeping at my workstation.					
15.	I do not feel stress and burden performing my daily routine as well as add hock tasks given to me.					
16.	I always work alone after my standard working hours.					

PART 4: SUGGESTION / RECOMMENDATION

4.1 What action would you take to improve the awareness of workplace hazards in your workplace?

_____

_____

4.2 What would you suggest to your employer to improve the awareness of workplace hazards in your workplace?

_____

_____

Thank you for taking time to complete this questionnaire.