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ASSESSMENT OF MEDICAL LABORATORY WORKERS' COMPLIANCE TO SAFETY BEHAVIOUR

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Universiti Utara Malaysia

MASTER OF SCIENCE

UNIVERSITI UTARA MALAYSIA

DECEMBER 2017

ASSESSMENT OF MEDICAL LABORATORY WORKERS' COMPLIANCE TO SAFETY BEHAVIOUR

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Thesis Submitted to

Othman Yeop Abdullah Graduate School of Business,

Universiti Utara Malaysia,

in Partial Fulfillment of the Requirement for the Degree of Master of Science

Pusat Pengajian Pengurusan Perniagaan
SCHOOL OF BUSINESS MANAGEMENT
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ABSTRACT

Workplace safety is of important irrespective whether it is manufacturing, construction or healthcare industry because it will affect the workers or the organization itself that may cause accidents that leads to death, injury, damage of machines or loss in profit. This study was held to determine the safety compliance level among medical laboratory workers and to study the influence of Work Safety Scale which consists of (a) job safety, (b) co-worker safety, (c) supervisor safety, (d) management safety practices and (e) satisfaction with safety program on the compliance with safety behaviour in a medical laboratory in Kuala Lumpur. A total of 191 questionnaires had been distributed to the medical laboratory workers which include pathologists, medical officers, science officers and medical laboratory technologists by using stratified random sampling method. 141 questionnaire were returned, however seven of them were dropped from the study due to incomplete responses in the questionnaire. The data collected from the study were analysed using Statistical Package for Social Sciences (SPSS) version 23. The result revealed the mean value of safety compliance level is of 4.159 (n = 134). The multiple regression result showed none of the facets of the work safety scale had a significant influence on compliance with safety behaviour among the medical laboratory workers.

Keywords: compliance with safety behaviours, job safety, co-worker safety, supervisor safety, safety management practices, satisfaction with safety program

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ABSTRAK

Keselamatan di tempat kerja adalah penting sama ada di industri perkilangan, pembinaan atau kesihatan kerana ia boleh mempengaruhi pekerja atau organisasi di mana ia boleh menyebabkan kemalangan yang membawa kematian, kecederaan, kerosakan mesin atau kerugian dalam keuntungan. Kajian ini dijalankan adalah untuk menentukan tahap pematuhan tingkah laku keselamatan di antara pekerja makmal perubatan dan mengkaji pengaruh Skala Keselamatan Kerja (*Work Safety Scale*) yang terdiri daripada (a) keselamatan kerja, (b) keselamatan rakan sekerja, (c) keselamatan penyelia, (d) amalan keselamatan oleh pengurusan, dan (e) kepuasan program dan polisi keselamatan terhadap pematuhan tingkah laku keselamatan di sebuah makmal perubatan di Kuala Lumpur. Sejumlah 191 borang soal kaji selidik telah diedarkan kepada pekerja makmal perubatan yang terdiri daripada pakar patologi, pegawai perubatan, pegawai sains dan juruteknologi makmal perubatan dengan menggunakan kaedah persampelan berstrata rawak. 141 borang soal kaji selidik telah dipulangkan namun 7 di antaranya terpaksa digugurkan daripada kajian ini kerana jawapan yang tidak lengkap. Data yang dikumpul dari kajian dianalisis dengan menggunakan Pakej Statistik Untuk Sains Sosial (SPSS) versi 23. Keputusan kajian menunjukkan nilai min tahap pematuhan tingkah laku keselamatan adalah 4.159 (n = 134). Hasil ujian regresi berganda menunjukkan tiada faset daripada Skala Keselamatan Kerja yang mempunyai pengaruh yang signifikan terhadap pematuhan tingkah laku keselamatan di antara pekerja makmal keselamatan.

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Kata kunci: pematuhan tingkah laku keselamatan, keselamatan kerja, keselamatan rakan sekerja, keselamatan penyelia, amalan keselamatan oleh pengurusan, kepuasan program keselamatan

ACKNOWLEDGEMENT

First, I would like to take this opportunity to express my deepest gratitude to my supervisor, Dr. Zuraida Binti Hassan on her assistance, guidance, constructive comments and motivation in helping me to complete this study. I may face lots of challenges in analysing the study and finishing this thesis without her encouragement and support throughout the semester.

Special thanks to, Pathology Department, Hospital Kuala Lumpur for giving me permission and cooperation in conducting a research among the medical laboratory workers. I also want to say thank you to all pathologists, medical officers, science officers and medical laboratory technologists that completed my study's questionnaires. I would like to extend my appreciation to Dr Suryati Mohd Yusoff, the chairperson for Occupational Safety and Health Committee of Department Pathology for her guidance and advice for the study.

I would like to say millions of thank you to my dear friend, Foong May Wan for her help and assistance in completing this research paper.

Lastly, thanks a million to my husband and my beloved parents for the supports throughout the journey of this master course. Thank you for all the support, guidance, love, trust and belief in me throughout the years.

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LIST OF ABBREVIATION

CCOHS	Canadian Centre for Occupational Health and Safety
FTE	Full-time equivalent employees
MOH	Ministry of Health Malaysia
OSHA	Occupational Safety and Health Act 1994
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Chapter 1 will discuss about the background of the study in which the reason to study the safety compliance behaviour among medical laboratory workers, the problem statement, research questions and objectives, the scope of the study, significance from the study and the definition of some terms used in the study.

1.2 Background of the Study

Accident at workplaces may cause loss of life, injuries or properties damage and thus safety is a major concern for an organization. Yearly fatalities of over 2.3 million work related accidents and diseases took place in a global scale with about 6,300 people die every day (International Labour Organization, 2014). There were over 313 million cases of non-fatal occupational accidents reported in 2010 with an average of 860,000 people injured or suffered ill health on a daily basis (International Labour Organization, 2014). In Malaysia, for the year 2014 and 2015, the fatality rate was 4.21 and 4.84 per 100,000 worker (Department of Occupational Safety and Health Malaysia, 2017) with 63,331 cases and 62,837 cases of accidents reported respectively (Social Security Organisation, 2015).

Occupational accident causes financial loss directly or indirectly and the negative impact not only affect the employers, but also the valuable employees and the nation. For employers, lost time injury of workers and damage or machine cause reduction in productivity that may affect their business reputation and profit. In

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contrast, occupational accident not only inflict suffering to the victim but also affecting their household income and quality of life. For the year 2014 and 2015, the employment injury scheme paid out by Social Security Organisation was RM865,679,046 and RM911,721,968 respectively (Social Security Organisation, 2015). Malaysia is a developing country undergoing rapid industrialization, all these losses play a significant impact on the economy of the nation.

It might be seen as a burden of regulation, however practising occupational safety and health at work brings meaningful circumstances such as creating a safe and healthy environment that decreases rate of accidents, injuries, risks and accident or injury-related expenses. In addition, it will boost productivity and creates better motivated workers who are happy, healthy, reduces absenteeism from work and lowers turnover rates. All this factors improves reputation for the organization concerning corporate responsibilities among shareholders, clients and the society, elevates the brand value as well as goodwill (Health and Safety Executive, n.d.).

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In Malaysia, Ministry of Health (MOH) is the ministry that oversees the health system in the country by ensuring provision of equitable, obtainable and quality health amenities. This ministry has a general duty to oversee the running of the country's health care areas which comprises of enactment, developing guidelines, figuring effective strategies, allocating and deploying assets, observing, assessing, analysing, providing coaching, and regulating of outside assistance. Ministry of Health runs on objectives that are to help citizens in accomplishing, sustaining and keeping up a specific level of wellbeing status for a profitable way of life financially and socially. This is done by the ministry proposing or offering an informational and pre-emptive

propositions other than effective treatment regimen and rehabilitation amenities (Ministry of Health Malaysia, 2017).

There are many programmes and divisions, institutions and agencies under Ministry of Health with different functions and responsibilities in various field of healthcare system. One of the healthcare services provider namely the pathology services that is provided by the medical laboratories which main function is to support the clinical and/or non-clinical services for the medical/hospital or public health.

Medical laboratory or clinical laboratory provides laboratory services for the examination and investigation of materials got from the human body to provide information in diagnosis, treatment and prevention of diseases or disorders, assess the human being health condition, provide consultant advisory services of laboratory testing which includes explanation of the laboratory results and consult further appropriate testing or investigation. The examination can be either biological, microbiological, immunological, chemical, immunohematological, haematological, biophysical, cytological, and pathological or any other forms of examination. The examinations also involve procedures to determine, measure or describe the absence or presence of different substances or microorganisms (MS ISO 15189:2014).

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These medical laboratories are run by various healthcare workers of different expertise such as the pathologists, medical officers, science officers and medical laboratory technologists. Pathologist is a registered medical practitioner who possess the qualification of Master in Pathology, training and experience in the discipline of pathology that can carry out the analysis and diagnosis of diseases and also provides clinical consultation to the other medical. The science officer is an allied health profession that holds a bachelor degree in certain field that assist pathologist in the

laboratory technical management, quality activities of the laboratory, validation of some special test results and some other laboratory related works. Medical laboratory technologist is a personnel that holds a qualification in medical laboratory technology that perform tests in the laboratory (National Pathology Service, 2015; Pathology Laboratory Act 2007).

There are a wide range of occupational health and safety hazards faced by laboratory workers due to their association with the materials and the methods practised in the course of their work which of these hazards includes physical, chemical, biological, ergonomics and psychosocial hazard (Harrington, 1982; Gershon et al., 2000; Anuar, Zahedi, Kadir, & Mokhtar, 2008; Lugah et al., 2010). World Health Organization (2002) reported that annually, 3 million out of 35 million employees working in health sector globally were threatened by blood borne pathogens percutaneously (needle stick or sharp injuries); 2 million of these were afflicted with Hepatitis B virus, 0.9 million were afflicted with Hepatitis C virus while 170,000 were afflicted with Human Immunodeficiency Virus.

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Healthcare workers are often misunderstood as being a safer industry from others (Lugah et al., 2010), but it is impractical to have absolute safety in a laboratory environment. In United States, the statistics obtained by the Bureau of Labor in 2014 to 2016 disclosed that the incident rate of injuries in medical and diagnostic laboratories was 2.8 per 100 full-time equivalent employees (FTE) in 2013, 2.5 per 100 FTE in 2014 and 2.3 per 100 FTE in 2015. A study done by Anuar, Zahedi, Kadir and Mokhtar in year 2008 for three Malaysian referral medical laboratories from year 2001 to 2005 shown that the average annual incidence was 2.05 per 100 FTE with the

two most common injuries were sharp injuries (25.3%) followed by exposure to biohazard and chemical substances (19.9%).

No one knows a workplace better than the people who work in it. Workers' perception about safety is important as there are direct links between strong safety climates and reports of fewer workplace injuries though in healthcare setting (Gershon et al., 2000; Berser & Gurcan, 2015). Determining the level of safety in an institution can assist in revealing fundamental safety culture as the culture manipulates the attitudes to safety and affects consequences of its employees (Flin et al., 2006).

Laboratory control measures were designed to protect employees from various hazards. Employees promptly acknowledges safety procedure when the precautionary measures needed are proportionate with the probable risk. It is unrealistic to have absolute safety in laboratory, in spite of that safety in laboratory needs the involvement of both the lab administration and workers in coming up with safety practices and agendas to curtail the probability of laboratory mishaps and laboratory-obtained diseases (Sewell, 1995).

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1.3 Problem Statement

Accidents happen due to cause(s). Over the years, several accident causation theories have developed that tried to explain why accidents occur. The earlier theories believed that majority of accidents were caused by unsafe work behaviour or human errors, such as pointed out by Heinrich (Heinrich, 1931) and Ferrell in The Ferrell's Human Error Theory stated that human error is chronologically induced by one of the

three circumstances, namely inappropriate response, inappropriate activities and overload (Abdelhamid & Everett, 2000).

Furthermore, investigations revealed that accidents that involved failures beyond human or technical factors were to have causative factors that originates from problematic organizational and cultural components which undoubtedly influences unsafe work behaviour (Hale et al., 1998 as cited by Seo, 2005). Petersen was of an opinion that behind each unsafe condition, there is an administration framework that could have enabled that risk to happen; and behind each unsafe act, there exists a cause that drives those individuals to participate in those practices. Petersen also commented that the management system were mostly to be blamed for their ways of measuring and rewarding people and exhibiting unsafe working culture in the organization to be deem acceptable by its people (Minter, 1997).

Consequently, culture and climate related to safety is a topic of research interests with numerous studies been carried out. Health and Safety Commission stated that an institution's safety culture is the result of the ideals, thoughts, competencies, attitudes and behavioural frameworks placed by individual and the assembly that determines the dedication to, and the manner as well as the expertise of the safety and health management of an institution (Health and Safety Commission, 1993). In the meantime, safety climate is defined as the cognitive facet of safety culture which applies to all levels of the institution to which this alludes to "how individuals perceives" about safety and safety administration frameworks that incorporates the attitudes, ideas, thought and principles of people and assemblies (Health and Safety Executive, 2005).

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Health and Safety Executive, the United Kingdom industrial safety regulator recommends corporations that conduct high hazard/risk businesses ought to consistently evaluate their safety culture (Health and Safety Executive, 1999 as cited by Flin et al., 2006). Health care organizations has shown increased interest in the assessment of safety culture which is equivalent with the growing focus on revamping the safety culture (Nieva & Sorra, 2003). Safety climate is also becoming more significant as the work environment of a health care setting gradually put emphasis on reengineering, restructuring, and improved productivity (Gershon et al., 2000).

Past researches have indicated that various factors have contributed to unsafe job conduct being with perceived safety climate is one of the pertinent determinants (Seo, 2005). There are studies carried out to study the safety climate in healthcare setting (Dejoy, Murphy & Gershon, 1995; Gershon et al., 2000; Neal, Griffin & Hart, 2000; Felknor et al., 2000). A variety of safety climate factors were studied in their researches such as management support, cleanliness, training, personal protective equipment and others. The studies showed that their company's dedication to safety from the employees' point of views has been influential corresponding to the implementation and perpetuation of safe job practices (Dejoy, Murphy & Gershon, 1995; Gershon et al, 2000; Felknor et al., 2000). However there is much scarcity to studies being done to employees working specifically in a medical laboratory to measure their perception regarding safety climate. To reiterate, this study will examine the workers' perception of workplace safety by utilizing the Work Safety Scale in a medical laboratory.

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1.4 Research Questions

The identified research question for this study is:

a) What is the level of safety compliance among the medical laboratory workers in the Department of Pathology?
b) What is the relationship between the five facets of Work Safety Scale (i.e. job safety, co-worker safety, supervisor safety, safety management practices, satisfaction with safety program) with the compliance with safety behaviour among the workers?

1.5 Research Objectives

The objectives of this study are as follow:

a) To determine the safety compliance level among the medical laboratory workers.
b) To examine the relationship between the five facets of Work Safety Scale (i.e. job safety, co-worker safety, supervisor safety, safety management practices, satisfaction with safety program) with the compliance with safety behaviour among the workers

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1.6 Scope of Study

This research was performed among the medical laboratory workers in Department of Pathology, Hospital Kuala Lumpur. This healthcare institute is situated at Jalan Pahang, being the biggest and most comprehensive hospital under the Malaysian Ministry of Health and it is also the government tertiary referral hospital.

Department of Pathology composed of multiple pathology disciplines that provides diagnostic service to the whole country as it is the National Referral Centre for pathology services of the Ministry of Health. This department is one of the largest clinical departments in Kuala Lumpur Hospital with more than 300 laboratory staff from various categories. The diagnostic services are provided by 11 diagnostic units which include Chemical Pathology, Core Laboratory, Cytology, Drug and Research Laboratory, Haematology, Histopathology, Microbiology, Pre-analytical Unit, Toxicology, Paediatric Laboratory and Satellite Laboratories. The respondents for this study are pathologists, medical officers, science officers and medical laboratory technologists from the 11 diagnostic units who serve as the medical laboratory workers. The theoretical scope of this study will focus on the safety compliance level and how five facets Work Safety Scale (i.e. job safety, co-worker safety, supervisor safety, safety management practices, satisfaction with safety program) affect the safety behaviour of the medical laboratory workers.

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1.7 Significance of the Study

The findings of this study which is the compliance with safety behaviour will definitely aid the organization to identify all the influencing determinants that may cause accidents and injuries in the medical laboratory; thus creating a safe working environment which is beneficial to further boost the achievements of an organization. Apart from that, this study might be able to provide proactive information to the management about safety problems and prevent accidents from happening. Furthermore, the finding of this study would be useful in developing new

comprehensive safety procedures or revising existing safety procedures and safety manual in order to improve employees' compliance towards safety behaviour.

Through this study the medical laboratory personnel can express their opinions and thoughts about their job nature, their peer, their supervisor, the management's practices, the safety programs that are in place besides expanding the knowledge concerning the significance of the viewpoints of the employees as a constructive measurement tool that exhibits room for improvement in medical laboratories. In addition to that, the workers may benefit from this study when the management take measures to improve on factors or conditions that identified from this study to create and provide a better and safer workplace for the workers. A safer and better working condition may help to increase workers' job satisfaction.

For academic purpose, the findings and results of this study will provide beneficial discoveries related to safety practice in industries especially in medical laboratory working environment and can act as a reference and benchmark for their future workplace safety awareness programmes and quality improvements. It can also be a significant reference and proof for future researches and studies on safety compliance and safety behaviour. In fact, similar researches can be carried out as well in other diverse industry to enrich the stability and reliability of the study.

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1.8 Definition of Key Terms

Medical laboratory is the clinical laboratory that provides laboratory services for the analysis of substances obtained from the body of a human with the motive of providing information which aids in diagnosis, treatment and prevention of diseases

or disorders, determining the well-being of human being and providing consultant advisory services of laboratory investigation (MS ISO 15189: 2015)

Medical laboratory workers refer to personnel that work in a medical laboratory which include pathologists, medical officers, science officers, medical laboratory technologists, clerical staffs and health attendances.

Work Safety Scale refer to a 50-items instrument that assesses employee's perception of work safety (Hayes, Perander, Smecko, & Trask, 1998).

Job safety is the nature of work or condition that protect employees and prevent them from occupational injuries or diseases during their employment.

Co-worker safety describes the extent to which workers perceive their peers as valuing safety; it provides safety cues for the types of behaviours regarding safety that are appropriate and expected within the organization (Morrow et al., 2010).

The supervisor safety refer to safety responsibilities of a supervisor to ensure that their subordinates are adequately protected from workplace hazards.

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Management safety denotes as workers' perceptions of their management's or administration's value of safety and engagement in communication and actions that support safety (Christian, Bradley, Wallace & Burke, 2009).

Satisfaction with safety programs is the employees' review and contentment regarding the quality of policies, procedures, or interventions implemented by an organization with the intention of improving safety outcomes (Christian, Bradley, Wallace & Burke, 2009).

Compliance with the safety behaviour is described as the degree to which the workers abide with any safety procedures, rules, ordinance, set of standard practices, as in the guiding principle of their organization.

1.9 Organization of the Thesis

There are five chapters in this study in which Chapter 1 had outlined the background of the study, the problem statements, the research questions, the research objectives and the definition of key terms of this study. While Chapter 2 covers literature review of the study: the work safety perception, the five facets of the Work Safety Scale and safety behaviour. Chapter 3 will explain about the methodology on how this study will be carried out which includes research design, conceptual and operation definition, measurement of variables, sampling, data collection procedures, techniques of data analysis and pilot study. Chapter 4 will cover the analyses of data and findings from this study. Lastly, Chapter 5 summarizes the key findings and the significance of the findings, the scope and limitations and it also includes suggestions for future studies and the conclusion of this study.

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter covers a review of related literatures on the safety behaviour and five facets of Work Safety Scale, namely job safety, co-worker safety, supervisor safety, management safety practices, and satisfaction with the safety program. A brief overview of relevant legislation on safety health and perception of workplace safety will also be discussed in this chapter.

2.2 An Overview of Relevant Legislation

In Malaysia, safety and health issue is governed by Occupational Safety and Health Act 1994 or Act 512. This act is applied throughout all industries in Malaysia, which also includes the healthcare services; except on board ships and armed forces. This act is enacted to ensure the safety, health and welfare of the employees while working and to safeguard other individuals against risks to safety or health with the occupations of persons at work. Section 15 of this act requires the employers to establish procedures, programs and system to protect their workers from hazards, risks, accidents and injuries. Nevertheless, the employees or the workers are stated to co-operate with their employers to comply with any instructions or measures pertaining to safety and health established by the organization under Section 24 of this act (OSHA, 2015).

2.3 Perception of Workplace Safety

The working environment at an organization is being referred to as workplace safety and it accounts for all determinants that affect the safety, health and well-being of personnel. This accounts for hazardous working situations or procedures, environmental hazards, liquor and drug misuse, and a violent work environment (USlegal.com, n.d.).

The perception of workplace safety is the employees' awareness concerning their knowledge of basic safety, workplace hazards and risks, enactment of hazard preventions, utilization of safe approaches to work, processes, techniques and safety culture practice in the workplace. Survey is carried to study the employees' perception regarding safety, morale, safety training needs, safety compliance and others relevant factors and align these with the company's strategy (Safeopedia, n.d.).

The research on workplace safety perception had begun as early as 1980s with Zohar's (1980) ubiquitous report and ever since then has gained noteworthy recognition in organizational and psychological literature (Gyekye & Salminen, 2009). The shared perceptions about safety norms, viewpoints, values, principles, and practices of workers in their working environments was technically known as safety climate (Gyekye & Salminen, 2009). Safety climate is define as a coherent set of perceptions and expectations that workers have concerning safety in their organization and it is also a subset of organizational climate (Zohar, 1980; Griffin & Neal, 2000).

Different studies on safety perception have been carried out in different work groups, institutions and industries for the past 30 years; such as analysis in healthcare settings by Gershon et al. (2000), airport ground handling operations by Diaz and

Cabrera (1997), manufacturing industry by Liu et al. (2015), and Morrow et al. (2010) in rail industry. These investigations disclosed that workers have different attitudes to safety matters and in their view of workplace safety. There are also literatures on relationship of safety perception to safety performances (Hofmann and Stetzer, 1996), safety management policies compliance (Probst and Brubaker, 2001), job environment (DeJoy et al., 2004) and job satisfaction (Gyekye, 2005).

Workers who think that they have safe occupations tends to be involved in lesser accidents as compared to workers who think that they have hazardous jobs. The same employees who perceived that their workstation as safe was found to have lesser exposure to environmental hazards as well as having lower level of pressure and anxiety related to their work (Hayes, Perander, Smecko, & Trask, 1998). Researchers found out that employees who views negatively on safety climate (such as exorbitant job duties and job stress) will be likely to end up in doing dangerous acts; therefore increasing their vulnerability to accidents (Hofmann &Stetzer, 1996; Salminen, 1995).

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Survey on safety perception is a principal indicator on the performance of safety as they assist in recognizing the antecedent to accident occurrence. It also aids in providing proactive data about problems concerning safety thus preventing the problems from turning into accidents and injuries. The safety perception analysis provides guidance to the management to develop safety programs and also provides information about the safety management from employees' perspective. Besides that, this analysis is relatively economical compare to other proactive methods of accident prevention (Gyekye & Salminen, 2009).

2.4 Safety Behaviour

Safety behaviour is being defined as the behaviour that pertained to specific situation that is executed for the purpose of evading whether directly or indirectly in order to prevent worst outcomes from happening by Salkovskis (1991). Safety behaviour is the behaviour that supports safety activities and practices where it is also an important key in reduces workplace injuries (Zin & Ismail, 2012).

Unsafe behaviour is a major contributor of accidents. According to Heinrich (1931), 88% of industrial accidents happened due to unsafe acts by the labourers themselves, 10% by unsafe conditions while the remaining 2% was by God's will. The organization gains a lot from understanding the workers' safety behaviour in preventing incidents of work-related illness and accidents as these illnesses and accidents are quite costly with reference to the possibility of damage of instruments, loss of man-hours and even death (Morrow et al., 2010).

Safety behaviour is affected by an antecedent which is being defined as a stimulant or incident that takes place prior to a behaviour. Some of the examples of antecedents are working arrangements, qualities of the policies, instruments, resources and manpower. Worker's behaviour while working are prompted by these stimuli which are followed by the consequences, the stimulant or incident that takes place after a behaviour in time. This results in increasing or decreasing behaviour in the future, relying upon its reinforcing or penalizing attributes (Health and Safety Authority, 2013; BSMS.com, 2007). Figure 2.1 summarized the relationship between antecedent, behaviour and consequence.

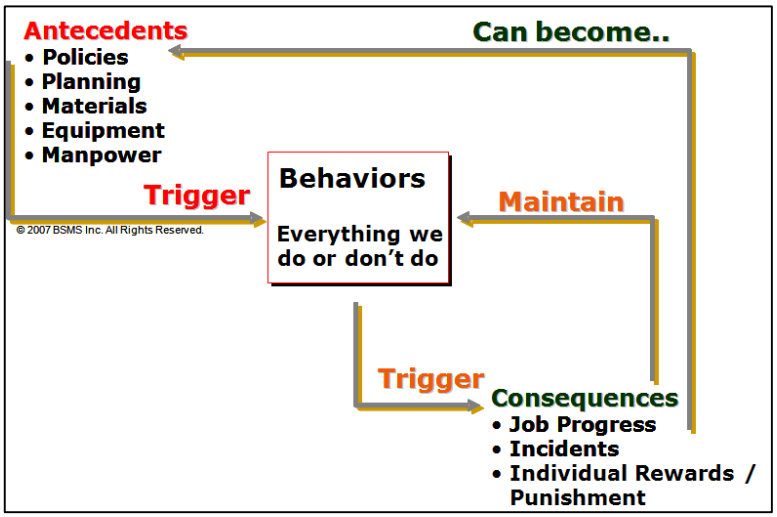

Figure 2.1
Behavioural Safety Approach.
Behaviour is triggered by the event namely antecedent(s) (i.e. policies, planning, etc) and this behaviour will further trigger another event namely consequence (i.e. job progress, incidents, etc).
Source: BSMS.com

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Safety behaviour can be expressed as safety compliance and safety participation (Griffin & Neal, 2000). Safety compliance is described as "the core safety activities that need to be carried out by person at work to maintain workplace safety", whereas safety participation "may not contributes to workplace safety directly, but it helps in developing an environment that supports safety". Safety compliant behaviours are not only limited to using or wearing personal protective equipment where necessary, but also following safety procedures and adhering to the rules and regulation that are implemented by the organization. Safety participation behaviour include workers voluntarily participating and involving themselves in safety activities, program or attending safety meetings, whistle-blowing or exercising their rights, helping other in safety related measures, initiating safety-related change, communication and voice, stewardship, and civic virtue (Christian, Bradley, Wallace & Burke, 2009).

Safe work behaviour was chosen as an indicator rather than accident rates in studies because (i) recordable accidents are generally scare and may occur as random incidents that is out of control of individual employees of organizations besides the difficulty to reveal the predictive relationships in a population where bad accidents does not occur to most people, (ii) self-reports of accidents may predisposed to certain errors as different people have different definitions of what an accident is, (iii) safe or unsafe behaviour seems to carry a more convincing implications for organizational action rather than accidents (Brown, Willis and Prussia, 2000).

Studies have demonstrated that there is a link between unsafe behaviour and accident occurrence (Hofmann & Stetzer, 1996; Neal & Griffin, 2006; Leung, Liang & Olomolaiye, 2015). There are also studies stated that workers that are satisfied with their job found to be committed to safe work behaviour (Gyeke, 2005), and these finding also occurred to workers with relatively higher organizational supportive perceptions (Gyeke & Salminen, 2007). Researchers have also proved that perceptions of safety climate are positively associated to safety compliance and show negative association to accidents at different level of analysis, such as at individual, group and organization. (Hofmann & Stetzer 1996; Hayes, Perander, Smecko, & Trask, 1998; Zohar 2000; Varonen & Mattila 2000).

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2.5 The Five Facets of Work Safety Scale

Work Safety Scale is an instrument that developed by Hayes, Perander, Smecko, & Trask (1998) to assess employees' perceptions of workplace safety. This Work Safety Scale measures five factually distinct variables namely job safety, co-worker safety, supervisor safety, management safety practices, and satisfaction with

the safety program. Each of these scales has a high degree of internal consistency across the three samples. Co-worker safety and supervisor safety were strongly related to employees' compliance with safety behaviours. The subscales were logically linked to job stress, psychological complaints, physical complaints, and sleep complaints.

2.5.1 Job Safety

The primary goal of occupational safety is to protect employees by offering them a comfortable and safe working environment and protects them against occupational injuries and diseases while maintaining their physical and mental health (Beser & Gurcan, 2015).

In the perspective of safety, workplace hazard and risk, all this constitute the workplace and environmental conditions and exposure that may cause possibility of loss of life, injury or danger. The mere existence of workplace hazard and risk will probably proliferates the workers' views of danger in work environment and is related to the psychological cost. Moreover, workers might need to exert more energy to deal with hazard and risk besides avoiding them; also exposure to hazards and risks will deplete workers' physical and mental resources and ultimately result in burnout (Nahrgang, Morgeson & Hofmann, 2011).

Job safety share a similar concept with work-safety tension, in which work-safety tension is described as the degree of intrinsic risk and discrepancy between productivity and the safety of employees associated with the performance of their occupation (Morrow et al. 2010). Job safety is also similar to the concepts of "perceived effects of required work pace on safety" by Zohar (1980), "employee risk

perception" by Brown and Holmes (1986) and "workers' involvement in safety" by Dedobbeleer and Béland (1991) (Morrow et al. (2010).

Zohar (1980) conducted a study to investigate the organizational safety climates and to examine the implications in 20 industrial organizations in Israel. This study revealed that chemical plants have the safest climate scores followed by metal processing, textile factories and food processing plants. The two aspects of astounding significance in deciding the climate were the employees' views regarding the relevance of safety in general production processes and their views of management outlook about safety.

Nahrgang, Morgeson and Hofmann (2011) found out that hazards and risks is explained by the largest percentage of variance for accidents, injuries and adverse events; while the work complexity is explained by the largest percentage of variance for unsafe behaviour. Their result analysis also indicated that job demand, when compared to physical demand, was most consistently comprised of risks and hazards in addition to the complexity of the job which affects the safety outcome, burnout and engagement of the employees.

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According to Gyekye and Salminen (2009), workers who has low work safety perceptions significantly think their jobs more likely to be hazardous. They also stated that job safety is a good predictor for perceived organization support. Perceived organization support is the common perception regarding the degree to which employees view their organization's contribution and interests in their welfare.

A socio-cognitive model for risk perception in hazardous work environment was developed by Mearns and Flins (1995) and pointed that the perception of hazard (risk) is partially associated to safety outcomes. Brown, Willis and Prussia (2000)

found that safety hazards were indirectly influencing the worker's safety conduct and the worker's perception in relation to safety climate. Workers' perception of their job had important effects as a significant predictor of both accidents and unsafe behaviour (Clarke, 2006).

2.5.2 Co-worker safety

Whenever risky behaviour occurs on the job, a co-worker often is in the best position to witness it. Co-workers are those in the immediate work environment that are exposed to the similar situations and hazards. They have greater opportunity in means of frequency of contact to warn their colleagues of the potential dangers as compare to their supervisor or management (Turner, Chmiel, Hershcovis & Walls, 2010).

Bandura's (1977) social learning theory postulates that people can learn through the direct reinforcement of their behaviour and also through vicarious learning and watching the outcomes of another's behaviour. In terms of vicarious learning, safety climate theorists argue that safety climate, being shared perceptions, provides norms and social cues for employee behaviour. In short, employees seeing others around them not only modelling safe behaviour, but also being rewarded for being safe or rebuked for acting unsafely (Casey & Krauss, 2013).

Co-worker safety describes the degree to which workers perceive their peers as valuing safety; it provides social cues for the types of safety behaviours that are appropriate and expected within the organization and it is analogous to "perceived effects of safe conduct on social status" by Zohar (1980) (Morrow et al., 2009).

In a study by Chiaburu and Harrison's (2008) intended to seek if co-workers have a relationship with job attitudes and with withdrawal behaviours, they found out that co-worker support was discovered to be positively associated to organizational commitment, job involvement, job satisfaction, and negatively related to effort reduction, absenteeism, intent to quit, and turnover. In comparing the current meta-analysis finding with previous studies, the effects sizes for co-worker influences were seem to be as large as or larger than almost all of the effect sizes for leader influence (McFadden, 2015). According to them, co-worker actions can predict attitudinal, perceptual, and behaviour outcomes of their colleagues even when the influence of the direct leaders is accounted for (Chiaburu & Harrison, 2008).

A safety climate survey that included three items in determining workmates influences have been carried out by Zhou, Fang and Wang (2008). They have concluded that other workmates can easily influenced a worker's safety behaviour. On the other hand, personal characters like job experience and education does not seem to exert such strong influence with respect to safety behaviour.

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According to Turner, Chmiel, Hershcovis and Walls (2010), co-worker support for safety is related to less frequent hazardous work events (for under demanding job conditions). They explained that workers are relationally closer and more directly affected by the work practices of their co-workers, though respondents may have been more likely to attend to cues from co-workers.

Another study by Brondino, Silva and Pasini (2012) showed that co-worker safety climate mediated the relationships amongst safety climate of organization and safety behaviours, and amongst safety climate of supervisor and safety behaviour. Besides the effect of co-worker to safety behaviour, James (1996) found out that there

was a notable effect on work performance for employees who works in a team as they have a better sense of fulfilment at work.

2.5.3 Supervisor Safety

The supervisor or the foreman is the key personnel in avoiding accidents from occurring in the workplace. He holds great influence as having the ability to manoeuvre the job performance of the workers in order to successfully preventing accidents from happening (Heinrich, 1959). Supervisor is an individual who is entrusted to oversee a workplace or have authority over a worker (Occupational Health and Safety Act, R.S.O. 1990). His primary responsibilities are to achieve the duties given and maintain the welfare of the team (Flin & Yule, 2004). He also hold a vital responsible in supporting professional standard, requirement as well as expectation which is to nurture a more benevolent occupation setup besides the provision of workplace support (Barak, Levin, Nissly & Lane, 2006).

Promoting effective leadership and creating a safe workplace are the key goals in many modern organizations. Leadership can be seen in three styles, namely transformational, transactional and laissez-faire (Flin & Yule, 2004). Transformational leaders are considerate, charismatic, stimulating, inspiring, self-confidence, self-belief; they instil a sense of motivation in their followers, an attractive future and articulate shared goals. On the other hand, transactional leaders assign objectives to be achieved, supervised performance, directs reinforcement correspondingly, achieve a sense of compliant from followers and seeks consent on matters that need to be accomplished. Whereas a laissez-faire

leader do nothing and just relinquish the leadership role (Flin & Yule, 2004). The relationship (addictive effect) between transformational and transactional leader behaviours and performance is displayed in Figure 2.2.

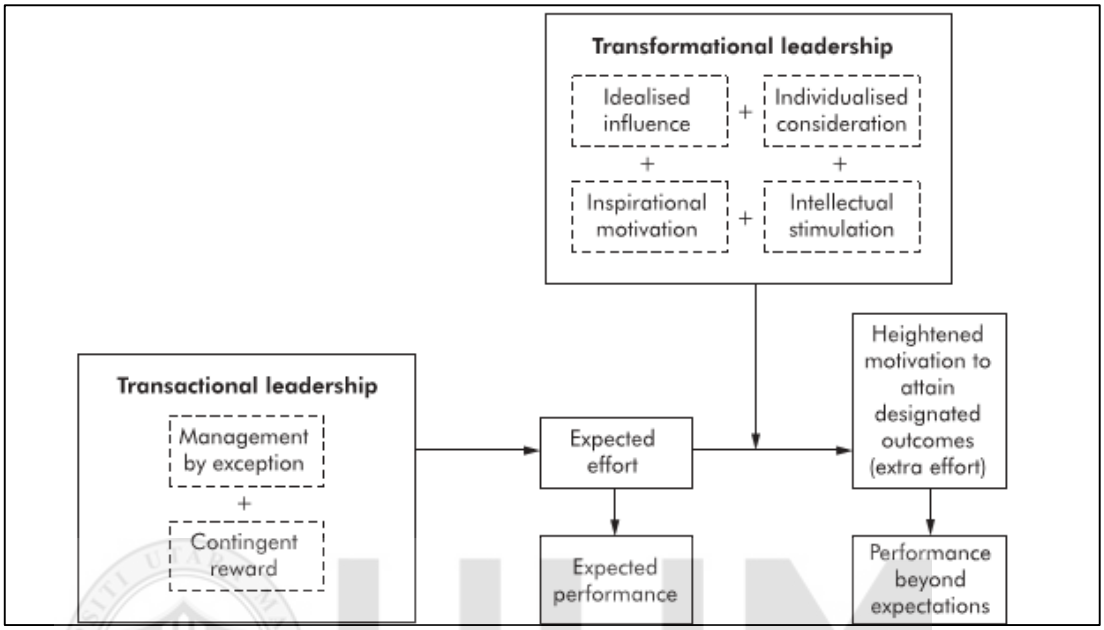

Figure 2.2
The augmentation effect of transformational on transactional leadership. Transformational leadership combined with transactional leadership, which is more focused on the exchanges or transactions between leaders and followers, stimulates peak performance in followers.
Source: Flin and Yule, 2004

.

A supervisor structures, coordinates, and facilitates work activities, thus, this management level benefits from both leadership style of transformational and transactional (Flin & Yule, 2004). Main transactional leadership safety behaviour of a supervisor is a supervisor that monitors and reinforces workers' safety behaviour; and participates in workplace safety activities. While the main transformational behaviours are like encouraging workers to involve in safety initiatives and he himself being supportive of safety initiatives (Flin & Yule, 2004).

Supervisors who exhibited safety-specific transformational leadership produce workers who has more encouraging or positive views of safety climate as well as these workers were unlikely to be involved in unsafe behaviour (Barling, Loughlin & Kelloway, 2002).

In a study by O'Dea and Flin (2000) at one offshore oil and gas industrial company, they found out that employees' perception on commitment towards safety showed by site managers was the most important determinant in the model, where it directly predicted the employees' perceptions on commitment towards safety by their supervisor and employees' participative involvement. As a main mediating variable in the model, employees' participative involvement in safety directly predicted both the employees' compliance to rules and indirectly predicted their conduct initiated towards safety.

In another study of supervisor safety also in the offshore trade, Fleming, Flin, Mearns and Gordon (1996) discovered that the more supervisors exhibit participative management style effectively, the more emphasis these supervisors put on the importance of teamwork, more value placed on their work group and these supervisors appeared to view safety as an important element as part of their responsibility. Less promising supervisors displayed avoidance behaviours, where they doesn't seem to show appreciation to their workers, they don't place trust on their subordinates, they did not seem to have participatory styles, and spent most of their time in policing the workforce.

Zohar and Luria (2003) showed that practices of safety by supervisors such as frequently bringing up safety matters while conversing with the workers causes

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a marked reduction in the occurrence of workers' unsafe behaviour and is followed by a significant improvement in safety climate perceptions.

Hofmann and Stetzer (1996) stated that the employee will not place a strong emphasis on safety as a result of perception that safety is not important if their supervisor never mentions safety. Supervisor's commitment to safety can improve safety performance, since supervisor is both the trainer and instructor at the front line (Mearns, Whitaker & Flin, 2003).

A supervisor who is supportive and not controlling encourages the safety perception and boosts inspirations in the employee creativity (Edmondson, 1999; Deci, Connell, & Ryan, 1989; Oldham & Cummings, 1996 as cited by May, Gilson & Harter, 2004). A supervisor that cultivates a supportive work environment generally showed concerns for employee's necessities and feelings, gives positive criticism and encourages employee to express their concern, expands new skills in work and find solution to issues related to work (Deci & Ryan 1987 as cited by May, Gilson & Harter, 2004).

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2.5.4 Management Safety Practices

Management safety is described as the views of the employees regarding the importance of and commitment to safety by their management. It has been labelled as management attitudes toward safety by Zohar (1980), management concern for employee well-being by Brown and Holmes (1986) and management commitment to safety by Dedobbeleer and Béland (1991) (Morrow et al., 2010).

Generally, there are three level of managers: higher level manager or senior manager are usually more involving in organizational strategies, such as formulating policies, making long-term plans, modifying organization's structure and their decisions are on long-time perspective; middle level managers are mainly concerned with tactics such as enactment and implementation of organization's policies and programs; while the low level managers are the supervisors that are more concerned with operational matters such as structuring, facilitating and co-ordinating work activities which have been described in earlier part of the literature (O'Dea & Flin, 2003).

The leadership behaviours for safety for managers can also be categorised into transactional and transformational behaviours. The transformational behaviours of a middle manager will show emphasising safety over productivity, communicating the company's inspiration for safety to supervisor as well as adopting a decentralised style; while for a senior manager, the transformational behaviours include encourages participatory styles in middle manager and supervisor, showing concerns for other people, allocating time and committing to safety visibly and consistently. A transactional leadership for a middle manager is displayed by involvement in safety initiatives while the transactional leadership for a senior manager is ensuring the compliance with regulatory needs and provides resources to develop an extensive safety program (Flin & Yule, 2004).

Health and Safety Executive, a body that is accountable for motivating, regulating and enforcing a healthy and safe workplace in United Kingdom has been long recognized that managers played a vital influence on organizational safety. They stated that inferior management and disregard of good practices are the grounds for

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failures in the aspect of safety and health in United Kingdom's organizations. According to the body, the level of commitments displayed by senior management is important in promoting a positive safety and health culture; and it is best portrayed by the amount of resources like time, people, support, and money given to management of safety and health as well as the amount of significance placed on safety and health (Flin & Yule, 2004).

A study by Rundmo and Hale (2003) involving 210 senior managers working in an industrial corporation located in Norway revealed that the safety attitudes of the senior managers is a crucial contributory determinant for managers' behaviours and behavioural intentions. Some exceptionally vital perspectives for managers includes high commitment of the administration, high priority given to safety, intensified awareness to risk and low fatalism. All these contributes to a strong predictor of behavioural intentions as well as of behaviours regarding safety.

Effective leaders who have built superb interrelation with their subordinates display concern about psychological wellbeing of their subordinates. Such concerns encompasses physical welfare in scenarios of heightened risk. Management support and commitment for safety related activities is a major factor that influences a favourable outcome of a corporation's safety program (Cohen 1977; Zohar 1980). This dedication can be seen through participation of the management in safety committee, being mindful of safety in designing the job, job training program in addition to review the pace of the occupation (Zohar, 1980; Zohar, 2010).

Studies shown that perception of management commitment of safety practices is found to be related to employee commitment to safe performance or safe behaviour and the extent of which employees follow the safety precautions and accident rates

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(Hofmann & Stetzer, 1996). Management safety practices also found to be the significant predictor for job satisfaction and safety culture (Hayes, Perander, Smecko, & Trask, 1998; Arboleda, Morrow, Crum, & Shelley, 2003). Nevertheless, an employee who perceives that the organization valuing productivity over safety may be less likely to exhibit safe work behaviour for the reason that they were driven to make more profits and obtaining rewards (Morrow et al., 2010).

2.5.5 Satisfaction with the Safety Program

Safety program is a systematic, documented plan of action which serves the purpose of detecting and controlling hazards as well as describing safety responsibilities and responding to emergencies which then leads to the avoidance of accidents and occupational illnesses. The program is aimed at incorporating safety and health into the entire work applications and conditions (Worksafenbca, 2014). It can likewise be seen as surface manifestations of the primary values and beliefs of the institution concerning safety at the workplace. Different organization will have different programs as a program that is developed for one organization is not necessarily can fulfil the requirements of another organization.

A safety and health program must incorporate the components needed by the safety and health constitution with some fundamental components such as individual accountability, joint occupational safety and health committee, safety and health instructions, faultless job procedures, worker orientation, trainings, workplace inspection, the reporting and investigation of incidents or accidents, procedures regarding emergencies, promoting of safety and health as well as administering medical and first aid in workplace (CCOHS, 2017).

Cohen (1977) revealed a number of factors on successful occupational safety programs; (i) strong commitment to safety by the management, (ii) close contacts as well as interactions amongst the management, the supervisors and workers on safety matters, (iii) workforce stability, (iv) top housekeeping activities and efficient environmental controls, (v) individual conducts that advocate such stability (such as work arrangements, advancement procedures and well developed selection), (vi) training that emphasises on early coaching and follow-up instruction, and (vii) special modification on the traditional practices on safety to improve their appropriateness for implementation in the workplaces.

Under Occupational Safety and Health Act and Regulation 1994 (Act 514), section 16, it is mandatory for every employer or self-employed individual to develop a documented standard policy statement with regards to the safety and health at work, making arrangements for the execution of that policy, and to ensure that all his employees are aware about the newly prepared statement of the safety policy and also to any revisions to the policy statement thereafter. Safety policy refers to the degree to which an organization creates a clear mission, accountabilities and goals to set standards of behaviour for workers, in addition to create a safety system to correct the safety behaviours of the workers (Lu and Yang, 2010).

The organization's dedication to safety can be seen by the creation of a safety policy in which this policy systematically states purposes, principles, plannings, guidelines and practices to be followed regarding to safety behaviours in the workplace (Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2007; Goetsch, 2011). A safety policy with a direct and purposeful statement mirrors the safety management of the

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organization, including the ultimate goal of 'zero' accidents and meeting the safety objectives that is established by the authorities (Lu and Yang, 2011).

Written safety policies and safety rules are essential parts of safety climate. Initiation and enactment of safety policies has been gestated as a feature of safety climate, which reflects on how organization implements safety policy, monitors safety procedures and encourages safety practices (Zohar, 2000; Griffin & Neal, 2000).

The satisfaction with safety programs or policies is the employees' review and contentment regarding the quality of policies, procedures, or interventions implemented by an organization with the intention of improving safety outcomes (Christian, Bradley, Wallace & Burke, 2009).

A study by Huang et al. (2004) showed that the quality of the execution of organization safety policies is among the factors that played a critical role in predicting injury incidence and satisfaction within the organization. Workers that were satisfied with the safety policies in workplace were also satisfied with their job (Gyeke, 2005). Study does also found that safety-related polices are strong predictor of safety climate (Diaz & Cabrera, 1997).

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2.6 Hypotheses Development

Based on the literature reviews, the hypotheses of the study was developed and additionally enables the process of relationships testing. Hypotheses have been developed to disclose the relationship between Work Safety Scale consisting of job safety, co-worker safety, supervisor safety, management safety practices and

satisfaction with the safety program with compliance with safety behaviour. The hypotheses of this study are summarised as follows:

H_1: There is a significant relationship between job safety and compliance with safety behaviour

H_2: There is a significant relationship between co-worker safety and compliance with safety behaviour.

H_3: There is a significant relationship between supervisor safety and compliance with safety behaviour.

H_4: There is a significant relationship between management safety practices and compliance with safety behaviour.

H_5: There is a significant relationship between satisfaction with the safety program and compliance with safety behaviour.

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2.7 Summary

This chapter described the concept and theory of job safety, co-worker safety, supervisor safety, management safety practices, and satisfaction with the safety program and their relationship with safety performance. Based on the literature reviews, the hypotheses are developed. The methodology of the study will be described in the next chapter

CHAPTER 3

METHODOLOGY

3.1 Introduction

Chapter 3 will explain the method and approach that are used in carrying out this research. This chapter be made up of of few sections which elucidate the research framework, operation definition, measurement of variables, design of the research, population and sampling. A pilot study will be carried out and the content validity will then be determined. Further, the procedures of data collection and techniques of data analysis will be also be explained in this chapter.

3.2 Research Framework

Based on the literature review, the relationships between five facets of Work Safety Scale and compliance with safety behaviour requisite further investigation. The relationships between job safety, co-worker safety, supervisor safety, management safety practices, satisfaction with safety program and compliance with safety behaviour was illustrated in Figure 3.1 as below.

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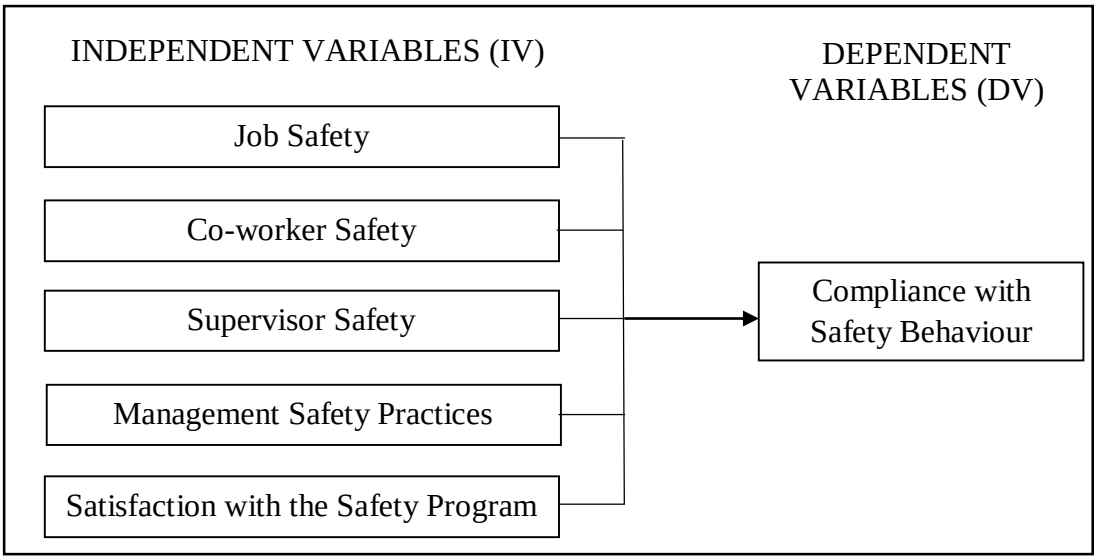

Figure 3.1
Research Framework

3.3 Conceptual Definitions of Variables

Conceptual definition describes the fundamental principles of a term while an operational definition recapitulates a metric to quantify something of interest (Church, 2004).

The independent variables of the study that are job safety, co-worker safety, supervisor safety, management safety practices and satisfaction with safety program, whilst the dependent variable is compliance with safety behaviour.

3.3.1 Dependent Variable

The dependent variable of the study is compliance with safety behaviour. Compliance with the safety behaviour is described as the degree to which the workers

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abide with any safety procedures, rules, ordinance, set of standard practices, as in the guiding principle of their organization.

3.3.2 Independent Variables

The independent variables of this study are the five facets of Work Safety Scale which consist of job safety, co-worker safety, supervisor safety, management safety practices, satisfaction with safety program and compliance with safety behaviour.

Job safety explains the nature of work or condition that protect employees and prevent them from occupational injuries or diseases during their employment.

Co-worker safety describes the extent to which workers perceive their peers as valuing safety; it provides social cues for the types of behaviours regarding safety that are appropriate and expected within the organization (Morrow et al., 2010).

The supervisor safety is the safety responsibilities of a supervisor to ensure that their subordinates are adequately protected from workplace hazards.

Management safety practices denotes as workers' perceptions of their management's or administration's value of safety and engagement in communication and actions that support safety (Christian, Bradley, Wallace & Burke, 2009).

The last independent variable is satisfaction with the safety program. The satisfaction with safety programs/policies is the employees' review and contentment regarding the quality of policies, procedures, or interventions implemented by an organization with the intention of improving safety outcomes (Christian, Bradley, Wallace & Burke, 2009).

3.4 Measurement

Two instruments namely Work Safety Scale and compliance with safety behaviour are used in this study.

Work Safety Scale is a 50-items instrument constructed by Hayes, Perander, Smecko, and Trask (1998) and have been validated using three independent samples. This scale was designed to have adequate validity and reliability, thoroughly assess important aspects of workplace safety perception and easily understand and answer by the respondents. Work Safety Scale measures five facets of employees' perception of work safety, namely (i) job safety, (ii) co-worker safety, (iii) supervisor safety, (iv) management safety practices and (v) satisfaction with the safety program. The Cronbach's alpha coefficient reported by Hayes Perander, Smecko, and Trask (1998) was summarized in Table 3.1 below. A five rating Likert scale rating by 1 to 5 was used to measure this five variables. The five point rating Likert scale are; 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

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Table 3.1
The Cronbach's alpha coefficients for the five facets of Work Safety Scale

Variables	Cronbach's alpha coefficient
Job safety	0.91
Co-worker safety	0.91
Supervisor safety	0.95
Management safety practices	0.95
Satisfaction with safety program	0.93

The items of the sub-scales of co-worker safety, supervisor safety and management safety practices reflect the behaviours of each of the respondents and the specificity of these items allow organization to discover the reason of poor employees'

perception about the work safety and thus provide an alternative to improve work safety perception. Moreover the use of work safety scale can provide understanding about the determinants and consequences of accidents in the workplace (Hayes, Perander, Smecko &Trask, 1998).

Compliance with safety behaviour scale is a 10-items instrument that measures of compliance with safety behaviours that developed specially for the study. Each of the items in this scale reflects a safe work behaviour. The 10-items was developed by referring to Safe Working And The Prevention Of Infection In Clinical Laboratories And Similar Facilities, a publication by Health and Safe Executive (2003) that intended to provide safety and health guidelines for clinical pathology laboratories personnel that includes workers, supervisors, managers and safety and health officers in (i) collection and handling of human derived specimens for both patient care and the laboratory; (ii) detect, recognize and evaluate the risks of infectious hazards; (iii) carry out suitable preventive measures to eradicate or control the detected risks; (iv) prepare standard working methods, that includes the safety measures and setups for running the work; (v) assure all personnel are notice and beware of the detected risks and know how to handle them; and (vi) meet their obligations under safety and health legislation.

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Five point Likert scale was also used to measure this variable. For each item, respondent is asked to indicate the frequency of his/her behaviour on his/her job by using a scale from 1 = Never, 2 = Seldom, 3 = Sometime, 4 = Often, and 5 = Always. The internal consistency reliability will be determined through the pilot study. All the variables, operational definitions, items and sources from which the items were adopted and adapted was summarized in Table 3.2 as below.

Table 3.2

The Dimensions, Operational Definitions, Items and Sources

Variables	Operational Definitions	Items	Sources
Job safety	The job nature and workplace condition of the respondent	1. I think my job is dangerous. 2. I think my job is safe 3. I think my job is hazardous 4. I think my job is risky 5. I think my job is unhealthy 6. I think my job could get hurt easily 7. I think my job is unsafe 8. I'm fear for health with my job 9. There's chance of death with my job 10. I think my job is scary	Hayes, Perander, Smecko and Trask, 1998
Co-worker safety	Respondent's concern with the people they work	1. My co-worker(s) ignore safety rules (R) 2. My co-worker(s) don't care about other's safety (R) 3. My co-worker(s) pay attention to safety rules 4. My co-worker(s) follow safety rules 5. My co-worker(s) look out for others' safety 6. My co-worker(s) encourage others to be safe 7. My co-worker(s) take chances with safety (R) 8. My co-worker(s) keep work area clean 9. My co-worker(s) is safety-oriented 10. My co-worker(s) don't pay attention (R)	Hayes, Perander, Smecko and Trask, 1998
Supervisor safety	Respondent's perception towards his/her immediate supervisor and the supervision practices	1. My supervisor praises safe work behaviour 2. My supervisor encourages safe behaviour 3. My supervisor keeps workers informed of safety rules 4. My supervisor rewards safe behaviour	Hayes, Perander, Smecko and Trask, 1998

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Table 3.2 (continued)

Variables	Operational Definitions	Items	Sources
		5. My supervisor involves workers in setting safety goals 6. My supervisor discuss safety issues with others 7. My supervisor updates safety rules 8. My supervisor trains workers to be safe 9. My supervisor enforces safety rules 10. My supervisor acts on safety suggestions	
Management safety practices	Respondent's perception on management safety concern and practices carried out in the workplace	1. The management provides enough safety training programs 2. The management conducts frequent safety inspection 3. The management investigates safety problems quickly 4. The management rewards workers that work safe 5. The management provides safe equipment 6. The management provides safe working conditions 7. The management responds quickly to safety concerns 8. The management helps maintain clean work 9. The management provides safety information 10. The management keeps workers informed of hazards	Hayes, Perander, Smecko and Trask, 1998
Satisfaction with safety program	Safety program and safety policies by the employer and the worthiness, usefulness,	1. The safety program (policies) are worthwhile 2. The safety program (policies) help prevent accidents 3. The safety program (policies) are useful 4. The safety program (policies) are good	Hayes, Perander, Smecko and Trask, 1998

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Table 3.2 (continued)

Variables	Operational Definitions	Items	Sources
	and the effectiveness of the program and policies in reducing injuries in the workplace	5. The safety program (policies) are first-rated 6. The safety program (policies) are unclear (R) 7. The safety program (policies) are important 8. The safety program (policies) are effective in reducing injuries 9. The safety program (policies) don't apply to my workplace (R) 10. The safety program (policies) do not work (R)	
Compliance with safety behaviour	The frequency of the respondent performs some particular actions in the current job	1. Never eat, drink or smoke while working in laboratory 2. Keep my work area clean and decontaminate workbench at the end of working day 3. Wear lab coat or overalls or gown when working in the laboratory 4. Wear protective eye-shield whenever there is a possibility of splash 5. Wear disposable glove for all hazard work and whenever there is a risk of contamination 6. Use a biosafety cabinet when work with specimens that may produce infectious aerosols 7. Never do mouth pipetting 8. Dispose of sharp objects into a sharp container 9. Dispose all potentially contaminated materials into a yellow biohazard bag 10. Know and understand the appropriate procedures in the event of an emergency	Health and Safe Executive, 2003

Note: (R) indicated a reverse statement

The variables was formulated in a form of self-administrated questionnaire for the collection of data. Sekaran & Bougie (2010) define questionnaire as a written set of pre-formulated questions for respondent to give their answers and opinions.

The questionnaire is designed with three different sections and consists of a total of 67 closed ended questions, Section 1 has questions related to demographic profiles such as age, gender, race, working experience, job title and education status of respondents. Section 2 are questions related to Work Safety Scale and section 3 are questions related to compliance with safety behaviour.

The questionnaire was prepared in two language; English and Bahasa Malaysia. The Bahasa Malaysia version was prepared by translated the questionnaire in English. The translated version was proof-read by Ms Maurice Micheal, a language teacher from local government school with a Degree in Bachelor of Education in Bahasa Malaysia. Each section of questionnaire is summarised and listed in Table 3.3 below.

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Table 3.3
Questionnaire summary

Section	Variable	Aspect Measured	Number of Questions	Scaled Used
I	Demography	Respondent Profile	7	Nominal
II	Work Safety Perception	Job Safety	10	Five point Likert scale: 1 = Strongly disagree 2= Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree
		Co-worker safety	10	
		Supervisor safety	10	
		Management safety practices	10	
		Safety program	10	

Table 3.3 (continued)

Section	Variable	Aspect Measured	Number of Questions	Scaled Used
III	Compliance with safety behaviour	Safety behaviour	10	Five point Likert scale: 1 = Never 2 = Seldom 3 = Sometime 4 = Often 5 = Always

3.5 Research Design

This research uses quantitative approach and will adopt a cross-sectional study to analyse the relationship of job safety, co-worker safety, supervisor safety, management safety practices and satisfaction with the safety program with work safety perception and the compliance to safety behaviour among medical laboratory workers in Department of Pathology, Hospital Kuala Lumpur. This research study incorporates steps to explain the problems of the study, conduct review of literature, construct the research design, define the sample, attain data collection, perform data analysis, generate conclusion from the findings, and prepare the final report. Hence, every step in the research is important and critical to warrant a reliable and comprehensive study.

3.6 Population of Study

The population denotes to the whole group of desired people, events, or objects that the researcher intends to explore and examine (Sekaran & Bougie, 2010). This study is based on the population of medical laboratory workers from Department of

Pathology, Hospital Kuala Lumpur. The laboratory workers include pathologists, medical officers, science officers and medical laboratory technologists. The distribution of the category of medical laboratory workers in Department of Pathology, Hospital Kuala Lumpur is shown in Table 3.4.

Table 3.4
The Distribution of the Category of Medical Laboratory Workers

Category of Medical Laboratory Workers	**Number of Workers**
Pathologist	24
Medical Officer	54
Science Officer	83
Medical Laboratory Technologist	202
TOTAL	363

Source: Administrative office's record of Department of Pathology, Hospital Kuala Lumpur

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3.7 Sample Size

A sample is a subgroup of the population and it consists of some elements that selected from the population (Sekaran & Bougie, 2010,). Study of a sample rather than the entire population as sampling reduces fatigue, fewer error; study the entire population would be too expensive in terms of time, cost and human resources (Sekaran & Bougie, 2010).

The approximate sample size for this study is 191 by referring to Krejcie and Morgan (as cited by Cavana, Delahaye & Sekaran, 20010, in which for a population size of 380, the nearest population size of this study, a sample size of 191 is needed.

3.8 Sampling Technique

Sampling is the process of making selection of the right events, objects, or persons that can represent the whole population (Sekaran & Bougie, 2010).

The selection of the sample is based on stratified random sampling method where the process starts with stratification or segregation of the population, and then the subjects are selected randomly from each stratum. Stratified random sampling is more efficient than simple random sampling method because each important section of the population is described more thoroughly for the same sample size and more differentiated and valuable information can be obtained in regards to each section.

The population is a total of 363 medical laboratory workers with a sample size of 191 people. For the stratified random sampling, first the workers were stratified according to their categories: pathologist, medical officer, science officer and medical laboratory technologist. For the determination of the sample size for each stratum / category, the calculation of "sample size of the strata = size of entire sample / population size * layer size" was used. The questionnaires were then distributed randomly to the medical laboratory workers from each category according to the sample size calculated. The sample size for each category of medical laboratory workers was shown in Table 3.5 below.

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Table 3.5
Sample size

Category of Medical Laboratory Workers	Number of Medical Laboratory Workers in Strata	Number of Medical Laboratory Workers in Sample
Pathologist	24	13
Medical Officer	54	28
Science Officer	83	44
Medical Laboratory Technologist	202	106
TOTAL	363	191

3.9 Pilot Study

Van Teijlingen and Hundley (2002) pointed out that there were few important reasons to conduct a pilot study, amongst are (i) to develop and test the adequacy of the research instrument, (ii) to test the suitability and effectiveness of sampling frame and technique, (iii) to evaluate if the research protocol is practicable and realistic, (iv) to assess the feasibility of a full-scale survey or study, (v) to collect preliminary data and (vi) approximating the variability to define the sample size.

For the conduction of the pilot study, a total of 30 questionnaires have been distributed to a group of respondents in which they were also a part of the target population of this study. The sample selection was according to the simple random sampling among the medical laboratory workers. The questionnaires were distributed and collected personally by the researcher. 30 questionnaires were collected, however one set of questionnaire has to be excluded as the items were not answer completely.

The data was then analysed using Statistical Package for the Social Sciences (SPSS) version 23 software. The objectives to perform this pilot study are to determine

the reliability, validity of the research instruments and the period needed for collection of distributed questionnaires. Cronbach's alpha reliability coefficient is used to determine the internal consistency of the scale. The result of the reliability test and the value of Cronbach's alpha is stated in Table 3.6 with negative or reverse statements for variables co-workers safety and satisfaction with the safety program were reverse-scored. During the pilot study, the Cronbach's alpha values for all the independent variables had met the minimum of 0.7 as recommended by Nunally (1978). Co-worker safety had the lowest Cronbach's alpha value among all the independent variables. The dependent variable scored the lowest alpha value, which is only 0.530. Tuckman (1999) suggested that a Cronbach alpha greater than 0.75 is acceptable for instruments that assess knowledge and skills while greater than 0.50 is acceptable for preference and attitude assessments. While according to Hinton, McMurray and Bronlow (2004), an alpha score of 0.5 to 0.75 is generally accepted as indicating a moderately reliable scale. Hence all the instruments in this study are reliable and valid for this study.

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Table 3.6

Cronbach's alpha values for variables during pilot study

Variables	Number of items	Cronbach's alpha values
Job Safety	10	0.785
Co-worker Safety	10	0.779
Supervisor Safety	10	0.854
Management Safety	10	0.808
Satisfaction with Safety Program	10	0.910
Compliance with Safety Behaviour	10	0.530

3.10 Data Collection Procedures

Before the conduction of study in the medical laboratory in Hospital Kuala Lumpur, an online application was submit to National Medical Research Registry as a requested procedure by National Institute of Health and current Ministry of Health Malaysia's policy on research, as this study involves Ministry of Health Malaysia's personnel and will be conducted in Ministry of Health Malaysia's facility. In addition, prior review and approval by Medical Research and Ethics Committee was obtained because the study involved human subjects.

The self-administrated questionnaires were distributed to the medical laboratory workers from each category according to the sample size calculated from all units on random basis; the questionnaires were then collected after two weeks of distribution. In the middle of that two weeks period, few follow-up was conducted to ensure the respondents were all on track.

For all the answered questionnaires and all statistical data for this study, the data only accessible by the researcher. The answered questionnaire will be kept in the locked cabinet for six months after the viva presentation. The answered questionnaire will then be disposed by 'shred' mean. The statistical data will be archived in Universiti Utara Malaysia e-library system as e-thesis and the access to the system is restricted to Universiti Utara Malaysia staff and students only.

3.11 Techniques of Data Analysis

The data obtained from the questionnaire survey was analysed using Statistical Package for the Social Sciences (SPSS) version 23 to analyse the validity and

reliability of the data and test the research hypotheses. All the incomplete questionnaires and data will be dropped from the data analysis to ensure the final data collection is worthy to enter into SPSS software for analysis.

The analysis begin with descriptive statistics to present the data acquired in a structured, accurate and summarised manner. The descriptive analysis which includes frequencies and percentages is used to analyse the demographic data. The demographic data including age, gender race, working experience, job title and education status of the respondents. Similarly, the descriptive analysis also checked the frequencies of all Work Safety Scale variables and compliance with safety behaviour variables included mean, standard deviation, maximum and minimum values.

The five facets of Work Safety Scale and compliance with safety behaviour were measured for the reliability to check for the consistency and Cronbach's alpha coefficient was used to determine the consistency. The closer Cronbach's alpha value to 1, the higher the internal consistency reliability (Sekaran & Bougie, 2010).

The correlation between the independent variables and dependent variable was determined through analysis namely Pearson correlation two-tailed test. The data will be further analysed using regression analysis, where we can work out which of these five facets of WSS independent variables is a better predictor for the dependent variable which is compliance with safety behaviour in this study. The variance was determined from R square value and beta coefficient verified the contributors ranking.

3.12 Summary

Chapter 3 delineated the study's design, the questionnaire design, the instrument used, the population and sample, the procedure of data collection, and the

data analysis methods of the study. The result of the pilot study showed that the questionnaire used was reliable and valid to assess the five facets of Work Safety Scale and the compliance with safety behaviour. The next chapter will detail the results of the study.

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CHAPTER 4

RESULT AND DISCUSSION

4.1 Introduction

This chapter will discuss the result generated and analysed from this study. There are five sections in this chapter. First section describes the response rate of the study. Second section focuses on the descriptive statistics of the respondents' profile and all Work Safety Scale variables and compliance with safety behaviour variables; while the third section describes the reliability and consistency of the variables. The forth section analyses the correlation between the five facets of Work Safety Scale and compliance of safety behaviour through Pearson correlation two-tailed test, and the last section analyses which facet amongst these five facets of Work Safety Scale is a better predictor for the compliance of safety behaviour by using the multiple regression analysis.

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4.2 Result

All the data obtained for this study was analysed using Statistical Package for the Social Sciences (SPSS) version 23. The response from all the questionnaire surveys collected were first key in to SPSS for further analyses. The analysis is started off with the descriptive statistic to look for the frequency, percentage, mean, standard deviation, maximum and minimum value. Reliability and consistency of the variables was checked by Cronbach's alpha value. The correlation between the independent

variables and dependent variable was analysed using Pearson two-tailed test and the relationship was determined by standard regression analysis.

4.2.1 Response Rate

A total of 191 set of self-administrated questionnaires were distributed to the respondents according to calculated sample size as discussed in Chapter 3. There were 141 questionnaires returned which account for 73.8 percent of response rate. There were 12 sets of questionnaire returned by pathologists, 21 sets returned by medical officers, 44 by science officer and only 64 were returned by the medical laboratory technologists. Among the 141 questionnaires returned, seven of the questionnaire were dropped and excluded from the study as the items were not answered completely. Table 4.1 summarizes the number of returned questionnaire by category and its response rate.

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Table 4.1
Number of Questionnaires Returned and Response Rate

Category of Medical Laboratory Workers	**Calculated Sample Size**	**Number Of Questionnaire Returned**	**Response Rate (Percent)**
Pathologist	13	12	92.3
Medical Officer	28	21	75.0
Science Officer	44	44	100.0
Medical Laboratory Technologist	106	64	60.4
TOTAL	191	141	73.8

4.2.2 Descriptive Analysis

The respondent's profile are analysed using descriptive analysis which include the frequency and the percentage. The respondents' profile consist of gender, age, race, number of working experience in medical laboratory, job position, education level and the laboratory unit the respondents belong to. Table 4.2 summarizes the data of the respondents' profile. The respondents consist of 24 males (17.9 %) and 110 females. (82.1 %). Most respondents are aged between 20 – 30 years old (50.0 %) followed by respondents aged 31 – 40 years old (38.1 %), 41 – 50 years old (8.2 %) and 51 years old and above (3.7 %). Malays are the majority race among the respondents (71.6 %). 4.5 percent of the respondents are Chinese, 11.2 percent of the respondents are Indian and 12.7 percent of respondents are of other races. Majority of the respondents have a working experience of less than 5 years (45.5 %) followed by respondents that have been working for 6 – 10 years (28.4 %), 11 – 50 years (18.7 %) , 16 – 20 years (5.2 %) and 2.2 percent of the respondents have work for more than 20 years. The greatest category of respondents are from medical laboratory technologist (42.5 %) followed by science officer (32.8 %), medical officer (15.7 %) and the least category is the pathologists (9.0 %). There are 45.5 percent of respondents holding a bachelor degree, 39.6 percent of respondents holding a diploma, 14.2 percent of respondents with master degree and only one respondent is with Doctor of Philosophy degree (0.7%). The respondents are from different laboratory units where the three highest response laboratory units are from Core Lab Unit (18.7 %), followed by Hematology Unit (17.2 %) and Microbiology Unit (14.9 %). Pre-analytical counter accounts for the lowest respondents (4.5 %). Satellite Lab have the same respondents as the Drug lab

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and Toxicology Unit, which is 19 respondents (14.2 %). 12 respondents were from Chemical Pathology Unit and 10 respondents were from Histology and Cytology Unit.

Table 4.2
Demographic Profile of the Respondent

Item	**Frequency**	**Percentage**
Gender:		
Male	24	17.9
Female	110	82.1
Age:		
20 – 30 years	67	50.0
31 – 40 years	51	38.1
41 – 50 years	11	8.2
51 years and above	5	3.7
Race:		
Malay	96	71.6
Chinese	6	4.5
Indian	15	11.2
Others	17	12.7
Number of Working Experience in Medical Laboratory:		
less than 5 years	61	45.5
6 – 10 years	38	28.4
11 – 15 years	25	18.7
16 – 20 years	7	5.2

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Table 4.2 (continued)

Item	Frequency	Percentage
Job Position:		
Pathologist	12	9.0
Medical Officer	21	15.7
Science Officer	44	32.8
Medical laboratory Technologist	57	42.5
Educational Level:		
PhD Degree	1	0.7
Master Degree	19	14.2
Bachelor Degree	61	45.5
Diploma	53	39.6
Laboratory Unit:		
Microbiology	20	14.9
Chemical Pathology	12	9.0
Hematology	23	17.2
Histology and Cytology	10	7.5
Core Lab	25	18.7
Drug Lab and Toxicology	19	14.2
Pre-analytical Counter	6	4.5
Satellite Lab	19	14.2

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Descriptive analysis was also used to analyse the independent variables and dependent variable. The descriptive statistics which include mean, standard deviation, maximum and minimum values for each variables are documented in Table 4.3. Mean measures the central tendency while standard deviation measures the dispersion. The mean in combination with the standard deviation is a useful tool in which that in a normal distribution, more than half of the respondents are within one standard deviation of the mean and practically all respondents fall within three standard deviations of the mean (Sekaran & Bougie, 2009). Job safety had the least mean value of 2.955 (*SD* = 0.666), while compliance with safety behaviour score the highest mean value of 4.159 (*SD* = 0.548) among other variables.

Table 4.3:
Descriptive Statistics of the Main Variables (n = 134)

Variables	**Mean**	**Standard Deviation**	**Minimum**	**Maximum**
Job Safety	2.955	0.666	1.00	4.50
Co-worker Safety	3.609	0.612	2.10	5.00
Supervisor Safety	3.734	0.533	2.10	5.00
Management Safety Practices	3.498	0.529	1.90	5.00
Satisfaction with Safety Program	3.879	0.522	2.70	5.00
Compliance with Safety Behaviour	4.159	0.548	2.40	5.00

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4.2.2.1 Safety Compliance Level

The compliance to safety behaviour of medical laboratory workers was calculated as in Table 4.4. Workers who given the response of “always” and “often”

were classified as complied to safety behaviour; while the other three categories – "sometimes", "rarely" and "never" were grouped and defined as non-compliant responses. High scores will denote high level of compliance. The highest levels of compliance reported were for dispose of sharp objects and dispose of contaminated materials. The lowest levels of compliance was related to wear protective eye-shield whenever there is a possibility of splash (46.3%).

Table 4.4:
Proportion of Medical Laboratory Workers who Reported Safety Behaviour Compliance Activities "Always" or "Often".

Items	Complied to Safety Behaviour (Percent)
Never eat, drink or smoke while working in laboratory	53.0
Keep my work area clean and decontaminate workbench at the end of working day	79.1
Wear lab coat or overalls or gown when working in the laboratory	82.8
Wear protective eye-shield whenever there is a possibility of splash	46.3
Wear disposable glove for all hazard work and whenever there is a risk of contamination	91.8
Use a biosafety cabinet when work with specimens that may produce infectious aerosols	89.6
Never do mouth pipetting	57.5
Dispose of sharp objects into a sharp container	99.3
Dispose all potentially contaminated materials into a yellow biohazard bag	99.3
Know and understand the appropriate procedures in the event of an emergency	91.0

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4.2.3 Reliability

The reliability of a scale shows how the scale is free from random error. Two regularly used indicators of a scale's reliability are test-retest reliability and internal consistency. The test-retest reliability which also referred as 'temporal stability' is assessed by directing it to the same people on two different occasions, and computing the correlation between the two scores obtained. High test-retest correlations indicate a more reliable scale. Internal consistency is the degree to which the items that make up the scale are all measuring the same underlying attribute. Internal consistency can be measured in a few ways and the most commonly used is Cronbach's coefficient alpha. This coefficient alpha provides an indication of the average correlation among all of the items that make up the scale. The alpha values ranging from 0 to 1, with higher values indicating greater reliability (Pallant, 2011). However, there are no agreed upon standards for Cronbach's alpha. The most commonly used reference is Nunnally (1978) with a recommendation of a minimum level of 0.7. However, according to Robinson and Shaver (1973), the scale has a low reliability if the Cronbach's alpha value is less than 0.3; while the internal consistency of an alpha value between 0.5 – 0.6 is still acceptable. While according to Hinton, McMurray and Brownlow (2004), an alpha score of 0.5 to 0.75 is generally accepted as indicating a moderately reliable scale.

The result of the reliability test and the value of Cronbach's alpha is stated in Table 4.5. All independent variables scored a Cronbach's alpha value more than 0.8 with supervisor safety had the highest value, which is 0.920, followed by co-worker safety (0.916), management safety practices (0.902), satisfaction with safety program (0.887) and job safety (0.864). The dependent variable, compliance with safety

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behaviour had the lowest alpha value, 0.651. Hence, the internal consistency reliability of all measures used in this study are acceptable as according to references stated above.

Table 4.5:
Cronbach's Alpha Value for the Variable of the Study

Variables	**Cronbach's Alpha**
Job Safety	0.864
Co-worker Safety	0.916
Supervisor Safety	0.920
Management Safety Practices	0.902
Satisfaction with Safety Program	0.887
Compliance with Safety Behaviour	0.651

4.2.4 Pearson Correlation Analysis

Correlation analysis is used to describe the strength and direction of the linear relationship between two variables (Pallant, 2011). Pearson correlation coefficient, which is always denoted by letter, r, indicates the direction, strength and significance of the bivariate relationship among the variables (Sekaran & Bougie, 2009). The r value ranging from –1 to +1. The size of the value indicates the strength of the relationship while the sign in front of the value provides the indication on whether there is a negative or a positive correlation (Pallant, 2011). Pallant (2011) suggested that the strength is determined as: r = 0.10 to 0.29 is weak, r = 0.30 to 0.49 is medium or moderate and r = 0.50 to 1.0 is large or strong correlation for statistical significance.

Table 4.6 presents the results of a correlation analysis between the five elements of Work Safety Scale (independent variables) with the compliance with safety behaviour (dependent variable). The result of Pearson correlation test show a low, positive correlation between co-worker safety $r = 0.257$, $p < 0.01$, supervisor safety $r = 0.294$, $p < 0.01$, satisfaction with safety program $r = 0.221$, $p < 0.05$ with compliance with safety behaviour. The relationship between management safety practices and compliance with safety behaviour is medium, positive correlation with $r = 0.342$, $p < 0.01$. However, there is negative, no significant correlation was shown between job safety and compliance with safety behaviour ($r = -0.158$, $p > 0.05$).

Table 4.6:
Pearson Correlation Analysis (n=134)

	Job Safety	Co-worker Safety	Super-visor Safety	Manage-ment Safety Practices	Satisfac-tion with Safety Program	Compli-ance with Safety Behaviour
Job Safety	1.000					
Co-worker Safety	-2.920**	1.000				
Supervisor Safety	-0.174*	0.424**	1.000			
Management Safety Practices	-0.201*	0.390**	0.726**	1.000		
Satisfaction with Safety Program	-0.211*	0.516**	0.504**	0.488**	1.000	
Compliance with Safety Behaviour	-0.158	0.257**	0.294**	0.342**	0.221*	1.000

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

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4.2.5 Multiple Regression Analysis

Multiple regression analysis can be used to explore the relationship between several independent variables and a continuous dependent variable. This analysis helps to address how good a set of variables is capable to predict a particular outcome and which variable of the set of variables is the best predictor of an outcome. There are different kinds of multiple regression analyses, and the three main types are standard regression, hierarchical regression and stepwise regression. Standard regression analysis was used in this study to evaluate the size of the overall relationship between the predicted variable and the independent variables and the variance of independent variables uniquely contributed to the relationship (Pallant, 2011).

Preliminary analysis were carried out to ensure there is no violation of the assumptions of multicollinearity, normality, linearity, and homoscedasticity as recommended by Pallant (2011). Firstly, the multicollinearity is examined. The independent variables have a correlation less than 0.7 except between supervisor safety and management safety practices which has a correlation value of 0.726, a value slightly higher than the recommended value ((Pallant, 2011). However, with the multicollinearity checked through the Tolerance and VIF values, all the independent variables have tolerance value which is not less than 0.10, and the VIF value which is well below the cut-off of 10 (Pallant, 2011). Therefore, multicollinearity assumption is not violated. Normality, linearity and homoscedasticity are determined through checking the Normal Probability Plot (P-P) of the Regression Standardized Residual and the Scatterplot. In the Normal Probability Plot, all the points distributed in acceptably of straight diagonal line from bottom left to top right, while in the

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Scatterplot of the standardized residuals, the residuals are fairly rectangularly distributed, with most of the scores concentrated in the centre (Pallant, 2011).

The multiple correlation co-efficiency (R) between the dependent variable and the independent variables is 0.374. In addition, the coefficient of determination, R square = 0.140 means that only 14 percent of the variance in compliance with safety behaviour explained by the five independent variables examined in this study. It also means that, the other 86 percent are explaining other factors which are not considered in this study. From the analysis, the largest beta coefficient is 0.240, which is for management safety practice. The beta value for satisfaction with safety program was the lowest (0.001). However, the Sig. value for each independent variable is greater than 0.05, in which the conclusion can be made that all the five facet of Work Safety Scale is not making a significant unique contribution to the prediction of compliance with safety behaviour. The summary of the multiple regression analysis was summarized in Table 4.7 as below.

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Table 4.7:
Results of Linear regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.840	0.501		5.673	0.000
Job Safety	-0.053	0.071	-0.065	-0.752	0.454
Co-worker Safety	0.107	0.090	0.120	1.193	0.235
Supervisor Safety	0.060	0.128	0.058	0.470	0.639
Management Safety Practice	0.249	0.127	0.240	1.965	0.052
Satisfaction with Safety Program	-0.001	0.110	-0.001	-0.013	0.989

$R = 0.374^a$ $R^2 = 0.140$ Adjusted $R^2 = 0.106$

Notes:
a. Predictors: (Constant), Job Safety, Co-worker Safety, Supervisor Safety, Management Safety Practices, Satisfaction with Safety Program
b. Dependent Variable: Compliance with Safety Behaviour

4.3 Hypothesis Testing

The result show that there is no significant relationship between job safety, co-worker safety, supervisor safety, management safety practices and satisfaction with the safety program with compliance with safety behaviour. The hypotheses testing for this research is summarized in Table 4.8.

Table 4.8:
The Summary of Hypothesis Testing

Hypothesis	Statement	Result
H_1	There is a significant relationship between job safety and compliance with safety behaviour	Not supported
H_2	There is a significant relationship between co-worker safety and compliance with safety behaviour.	Not supported
H_3	There is a significant relationship between supervisor safety and compliance with safety behaviour.	Not supported
H_4	There is a significant relationship between management safety practices and compliance with safety behaviour.	Not supported
H_5	There is a significant relationship between satisfaction with the safety program and compliance with safety behaviour.	Not supported

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4.4 Summary

The results of the data analysis for this study are described in this chapter. The research analyses used was descriptive analysis, reliability testing, correlation analysis and regression analysis. There is a correlation between co-worker safety, supervisor safety, management safety practices, satisfaction with safety program with compliance with safety behaviour; however there is no significant influence of the five facets of Work Safety Scale to compliance with safety behaviour.

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CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter will further discussed on the results and findings of this research, which is focused on the relationship of job safety, co-worker safety, supervisor safety, management safety practices and satisfaction with safety program with the compliance of safety behaviour among the medical laboratory workers. The discussion will be focused on the research objectives. This chapter also discusses the implications of the findings and suggestions on some recommendations for future research.

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5.2 Recapitulation of major finding

A total of 191 survey questionnaire were distributed and 141 sets were returned which accounted for 73.8 percent of response rate; however seven of the survey questionnaire have to be withdrawn because of incompleteness of response. None of the facets of Work Safety Scale were found to have significant influence on compliance with safety behaviour.

5.3 Discussion of Research Question

The major focus of this study was to analyse or investigates the influence of Work Safety Scale with compliance safety behaviour among medical laboratory

workers in a medical laboratory of a government hospital. The following is a possible explanation of the findings reported in Chapter 4.

5.3.1 The Level of Compliance with Safety Behaviour among the Medical Laboratory Workers

The result of this study revealed that the mean value of 4.159 which indicates a moderate compliance with safety behaviour among the medical laboratory workers. This mean value was quite similar to the study that done by Hayes, Perander, Smecko and Trask in 1998, which had a mean value of compliance with safety behaviour of 4.22. A longitudinal study carried out among the hospital staff in Australia reported a mean value of safety compliance of 4.48 in Year 2 and 4.44 on Year 4 of the study period (Neal & Griffin, 2006).

A relatively low percentage of compliance to safety behaviour among the medical laboratory workers in Pathology Department in practices for "wear protective eye-shield whenever there is a possibility of splash" (46.3%), "never eat, drink, or smoke while working in laboratory" (53.0%) and "never do mouth pipetting" (57.5%) as compared to other practices that generally have a higher compliance rate of 80% and above. The medical laboratory workers are from different laboratory units which have different job nature and handling of different type of specimens. For an example, staffs from Chemical Pathology Unit mostly deal with blood specimen where possibility of splash is relatively low as compared to Histology Unit where grossing of a fixed tissue or organ may have a higher chance of splash especially when the specimen containing cyst fluid; thus the practice of wearing protective eye-shield may not be common among staffs that only handle blood specimens.

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Never eat, drink or smoke in laboratory is a general practice worldwide for all laboratory setting or any manufacturing factories. The generally low compliance of this practice may be due to the medical laboratory workers were not following strictly the rules that have been set. Certain rules may be hard to be adhered at 100% at all times such as water drinking in the laboratory due to the reason that humans need to take water frequently for the body to function normally without getting dehydrated, and the place for taking water, e.g. the pantry is usually located in the laboratory compound, hence the rule of never drink in laboratory might seem difficult to comply at all times by the medical laboratory workers. Pipetting using mouth is an old laboratory practice and strictly is not allowed nowadays as the person may easily get poisoned with the chemical or infected with the biological specimen.

5.3.2 Job Safety with Compliance Safety Behaviour

The result revealed that job safety does not show a significant influence on compliance with safety behaviour (Beta = -0.065, sig. > 0.05). The insignificant relationship concurs with the finding by the authors of Work Safety Scale; Hayes, Perander, Smecko and Trask (1998).

A job task that needs dealing with biological specimens and handling of hazardous or non-hazardous chemicals is different with a job task of operating manufacturing machines and facing different type and level of job hazard. A serious accident may happen to the operator of a manufacturing machine which might involve death, permanent injury or loss of certain bodily function that can seek an immediate effect. Formalin or formaldehyde, a chemical used in histopathology lab to preserve specimen is a human carcinogen that can cause nasopharyngeal carcinoma in long term

exposure; an injury caused by sharp or needle contaminated with infectious specimen that containing Hepatitis C virus or HIV positive may cause the worker to develop Hepatitis C and acquired immune deficiency syndrome (AIDS). The medical laboratory workers may have the perception that their jobs doesn't carry much safety impact as compared to other industries since the immediate effect to the exposure/accident cannot be seen immediately, thus they are not keen to adhere to the safety rules strictly. On the other hand, 26.9% of the medical laboratory workers have opinions that their job has chance of death and only 8.9% of them felt that their job is scary. The mean value for the medical laboratory workers who think that their job is scary is 2.2 (*SD* = 0.923) as compared to the container terminal operators who perceived that their job is scary with mean 3.02 (*SD* = 1.12) (Lu & Shang, 2005).

5.3.3 Co-worker Safety with Compliance Safety Behaviour

The result revealed that co-worker safety does not significantly influenced the compliance of safety behaviour among the medical laboratory workers. This result finding was contrary with the studies of Morrow et al., (2010) in the rail industry and Liu et al., (2015) in the manufacturing industry that co-worker safety affected the safety compliance of the workers in the industries.

Generally, medical laboratory workers work rather independently on their own in performing their everyday tasks in the laboratory, in which the completion of their job does not depend on other colleagues and therefore, one worker might not know and couldn't be bothered about what other workers are doing regarding their job; as long as everyone completes their own job in the stipulated time. This independent

nature of work of the medical laboratory workers would fairly affect the laboratory test quality and results rather than affecting their partners in the same laboratory. This independent work environment may probably influence the perception of the workers regarding the safety practice of other co-workers.

It is not unusual for people to be teased for wearing or using a protective equipment. It might even be considered as "macho" or "cool" to work unprotected and take risky short cuts (Geller, 2001). This type of work culture may affect the co-worker to take chances with safety and not adhere to the safety rules set by the organization.

Traditionally, a junior staff will learn skills from his senior through direct guidance, oral teaching and observation rather than reading, understanding and executing his work according to a standard operating procedure. When a senior staff practices in an incorrect way such as ignoring safety rules, it will mislead the junior staff into believing that the current unsafe work practice is therefore safe. Such mentoring will therefore enhance the unsafe work culture in the organization. In addition to that, the junior staff may be ignorant about the actual safety rules that needs to be adhered to and he may not know that he is also ignoring the safety rules. However, because the workers work independently, therefore their unsafe work practice does not affect other co-workers.

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5.3.4 Supervisor Safety with Compliance Safety Behaviour

In this study, supervisor safety was found to have no significant effect on the compliance with safety behaviour. This result finding is not in accordance with the findings of studies done by Lu and Tsai (2010) and Liu et al., (2015).

Supervisors play an important role in an organization. They are the ones workers looked up to for continuing guidance and support in a worker's daily job tasks. In the management level, supervisors guide, monitor and motivate their workers to uphold implemented practices in an organization.

There are many supervisory level in the medical laboratory; a supervisor can be either the senior medical laboratory technologist, science officer or the pathologist. Medical officer is usually not an immediate supervisor for the medical laboratory workers. The high level supervisor, e.g. a pathologist may not be able to carry out fully the role of a supervisor such are enforcing safe work procedures and practices and to take immediate steps to correct unsafe or unhealthful workplace hazards or conditions within their ability and authority. This is due to a pathologist does not involve directly in the technical or bench work of the laboratory job tasks. In addition to that, the pathologist's work station might not be in the laboratory area since the pathologist's main job is to report clinical laboratory findings based on the laboratory tests done by his/her subordinates. Therefore, the pathologist may not be able to monitor and immediately correct any unsafe work behaviour of the workers under his/her supervision.

The reward and punishment system is inadequate in the organization. The study object is a government setting institution, a supervisor cannot really penalize a worker for his unsafe behaviour with a strict punishment like warning letter, disciplinary action, and salary deduction especially when the supervisor is just a senior medical laboratory technologist or a science officer as he has no authority to do that. The supervisor can rewards subordinates who practices safe work behaviour by praising them for their safe work practices or to or to appoint them as committee in the organization's safety team. As mentioned earlier, if the supervisor is a pathologist,

he/she may not be able to identify all good laboratory practices that adhere to safety rules.

5.3.5 Management Safety Practices with Compliance Safety Behaviour

The result revealed that management safety practices has no influential contribution to compliance with safety behaviour among medical laboratory workers. This result coincides with the findings by the authors of Work Safety Scale; Hayes, Perander, Smecko & Trask (1998) and Al-Refaie (2013). Al-Refaie reported that top management, along with interrelationships, empowered employees and continual improvement do not enhance a safety behaviour for Jordanian medium-sized companies. Nevertheless, the finding from this study is contrary with the previous studies by Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás (2012) and Bosak, Coetsee & Cullinane (2013) that management's commitment have an effect on employee's safety behaviour.

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In healthcare setting, patient safety is considered by the management as the main priority; this is true for a medical laboratory as its main job is to provide accurate and timely diagnostic results and services to support the patient care. The focus of the organization will then affects the management decision in policy making, decisions and practices in order to provide accurate laboratory results as compare to accommodating its workers safety.

The management considers safety as an utmost priority in the industrialized countries (Rahim, Ng, Biggs & Boots, 2014), and the understanding of the safety acquiescence consequences in industrialized countries is high when compared to developing countries like Malaysia (Kortum, Leka & Cox, 2010). The management

team in a public healthcare setting mainly composed of the professionals graduated from medical and clinical educational degree with no safety expertise, lack in safety knowledge or not well-trained in occupational safety and health legislation, regulation and requirements. Thus the management may not be able to act in terms of safety and health matters effectively.

Safety training is provided by the management. However, most of the time it is organized yearly as part of an orientation program for new staffs reporting to the organization due to limited resources such as budget and trained personnel to organize the training. Furthermore, the number of participations for an orientation safety training program might be limited due to unavailability of participant slots and also, the manpower insufficiency in the laboratory do not allow for all intended new laboratory employees to participate in such orientation safety training program at the same time. As mentioned earlier, the management may place more emphasis on technical training rather than safety training to make sure the staffs are competent in producing accurate laboratory results and complying with Malaysian standard for medical laboratories.

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5.3.6 Satisfaction with Safety Program with Compliance Safety Behaviour

In the study, the result indicate that satisfaction with safety program does not affect the safety behaviour of the workers in the medical laboratory. This insignificant relationship corresponds with the finding by the authors of Work Safety Scale; Hayes, Perander, Smecko & Trask (1998). A study by Lu and Yang (2011) among 155 workers from passenger ferry companies in Taiwan also revealed that safety policy is not significantly related to safety compliance among the respondents.

There are safety policies and safety programs in place in the medical laboratory. However, the staff may found themselves ambiguous about the availability and implementation of the safety policy and safety program, as mentioned by Abdullah et al., (2009) that employee found issue of health and safety was extremely complicated and difficult to identify with. There is a copy of safety guideline namely Lab Safety Manual available and distributed at each laboratory unit for the reference of every workers in the laboratory. The staff may not be aware of the manual in view of accessibility unless being informed by the supervisor. There is also the possibility that some staff purposely ignore the safety manual although been instructed to understand the manual. Workplace safety inspection is carried out by the safety and health committee in the organization. However it is conducted annually which is inadequate to determine on the effectiveness of the measures taken to ensure safety and health of the workers at the workplace; as stated by Regulation 12 Occupational Safety and Health (Safety and Health Committee) Regulations 1996 that workplace to be inspected at least once in every three months.

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Accidents underreporting rates of 2.5 to 41% have been reported in the literature (Probst & Estrada, 2010; Psarros, Skjong & Eide, 2010; Facchin et al., 2013). Accidents that occurred in the workplace may not be reported by affected staffs. This might be due to the reasons that the reporting procedure is a tedious process and there is also the possibility that the staffs fear that they are to be blamed from post-reporting investigation for not adhering to safety rules and regulations in the first place.

5.4 Implication

In this section, the implications resulting from the outcome of the study will be discussed. It will be focused on both theory and practice.

5.4.1 Theoretical Implication

This study was carried out to examine the influence of five facets of Work Safety Scale on compliance of safety behaviour in a medical laboratory setting. There are similar studies of safety compliance done in different industries such as construction industry, telecommunication industry, utility industry and also government agencies. There are safety researches carried out in healthcare, and most of the researchers concentrated on hospitals rather than primary care (Castle & Sonon, 2006). With more research done to verify on compliance of safety behaviour, the result will be more credible and better. For that reason, this study was expanded to medical laboratories to determine the reliability of the five facets in Work Safety Scale, namely (a) job safety, (b) co-worker safety, (c) supervisor safety, (d) management safety practices, and (e) satisfaction of safety program, which will increase the stability on the study academically. In addition, this study was conducted among medical laboratory workers in the hope that it will create new opportunities for researches in the non-western to prove on the compliance on safety behaviour in the local setting. Besides that, this study would be worthwhile and will be an add-in value to the academic world due to lack of study being conducted among medical laboratory workers working at the healthcare industry in Malaysia.

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5.4.2 Practical Implication

The study on compliance with safety behaviour is not only fundamentals to the academic world but also to the operation of an organization. It is obligatory for all industries in Malaysia to abide, follow and implement Occupational Safety and Health Act and Regulations 1994 and other related legislation without fail in order to ensure the safety, health and welfare of workers and to protect others against safety and health's risk in conjunction with the activities of the workers. Occupational safety and health practices play an important role on improving organizational efficiency by reducing labour cost and loss-of-work hours due to injuries which is an important prerequisite for national economy. Study of workers' safety perception offers the management a powerful proactive tool to design effective safety management policies. Thus, this study is needed to look into the effectiveness of safety application of the organization. By conducting more studies on workers' safety behaviour, management could see the weaknesses and shortcomings in enforcement to provide a safe working environment to the staffs and to improve the overall quality of work. Moreover, safety training and workplace inspection should be held more frequently and there should be a two-way communication between the management and its staffs to ensure successful implementation of safety practices and safety awareness in the organization.

5.5 Limitations of the Study

There are some constraints and limitations in this research. The first limitation of the study is that the sample size was relatively small, with only 134 respondents (70.2 %) were able to complete the questionnaire. For that reason, this sample may have generated results that were insufficient and might not be represented thoroughly

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to reflect the factors that influenced medical laboratory workers' compliance with safety behaviour.

Besides that, this study only include one medical laboratory. A study that includes cross-sampling of all medical laboratories in few regions in Malaysia may provide a better and more accurate findings.

The third limitation is related to the assessment on variables that were based on self-report. According to Donalson & Grant-Vallone (2002), self-reports are prone to many sorts of response bias and inferences about correlational and causal relationships may be inflated by the problem of common method variance. In general, the respondents would be likely to respond in a way that views them in a positive light. Therefore, they tend to over-report behaviours deemed as appropriate and tend to under-report behaviours viewed as inappropriate.

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5.6 Future Research

This study was somewhat constricted and only focused on a medical laboratory. Further research of a larger scale that involves more medical laboratories and identify the factors that influenced their safety behaviour compliance, with regards to the actual working conditions is suggested for future research.

This study was performed particularly to examine the influence of Work Safety Scale on compliance of safety behaviour among the medical laboratory workers. The study showed that only 14 percent of the variance in compliance with safety behaviour explained by the five facets of Work Safety Scale, where 86 percent are of other factors or variables. Therefore, more studies can be done to include other factors that

influenced and are related to compliance with safety behaviour such as leadership, job satisfaction, communication and work pressure. In addition, future studies can include the demographic influences such as gender, educational level and working experience towards one's safety behaviour. Future researchers who are interested with this type of study can consider combining the survey questionnaire with interviews to complement the study.

5.7 Conclusion

This study investigates the effect of Work Safety Scale on compliance with safety behaviour in Department of Pathology, a medical laboratory. The result showed that none of the facet of Work Safety Scale has a significant relationship with safety compliance. Based on this research, the institution's top management and the administration ought to explore other causes that may influence the compliance of safety behaviour of its workers such as work pressure, job demands, environmental factors et cetera. Further enhancement on these factors should be carried out in order to improve the safety behaviour among the laboratory workers, thus reducing and preventing workplace accidents and injuries from occurring which will then contributes to a higher level of job performance among these workers.

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APPENDIX A

Questionnaire: Assessment of Medical Laboratory Workers' Compliance to Safety Behavior

This Survey (Questionnaire) is intended for
Partial Fulfillment of the Requirement for the Degree of Master of Science
(Occupational Safety and Health Management)
Universiti Utara Malaysia

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Any enquiries please contact:

Kong Sau Mun

012-9051483

SECTION 1: PROFILE DATA
BAHAGIAN 1: PROFIL DATA

Please tick (√) the appropriate response. *Sila tanda (√) pada pilihan yang sesuai.*

1. Gender / *Jantina*

( ) Male / *Lelaki*
( ) Female / *Perempuan*

2. Age / *Umur*

( ) 20 – 30 years / *20 – 30 tahun*
( ) 31 – 40 years / *31 – 40 tahun*
( ) 41 – 50 years / *41 – 50 tahun*
( ) 51 years and above / *51 tahun dan ke atas*

3. Race / *Bangsa*

( ) Malay / *Melayu*
( ) Chinese / *Cina*
( ) Indian / *India*
( ) Others / *Lain-lain*

4. Number of Working Experience in Medical Laboratory / *Tahun Pengalaman Bekerja di Makmal Perubatan*

( ) Less than 5 years / *Kurang daripada 5 tahun*
( ) 6 – 10 years / *6 – 10 tahun*
( ) 11 – 15 years / *11 – 15 tahun*
( ) 16 – 20 years / *16 – 20 tahun*
( ) More than 20 years / *Lebih daripada 20 years*

5. Job title / *Jawatan*

( ) Pathologist / *Pakar Patologi*
( ) Medical Officer/ *Pegawai Perubatan*
( ) Science Officer / *Pegawai Sains*
( ) Medical Laboratory Technologist / *Juruteknologi Makmal Perubatan*
( ) Health Attendant / *Pembantu Perawatan Kesihatan*

6. Education level / *Tahap Pendidikan*

( ) PHD / *Doktor Falsafah*
( ) Master Degree / *Ijazah Sarjana*
( ) Bachelor Degree / *Ijazah Sarjana Muda*
( ) Diploma / *Diploma*
( ) STPM/Certificate/Matriculation/A-level *STPM / Sijil / Matrikulasi / A-level*
( ) SPM

7. Laboratory unit / *Unit Makmal*

( ) Microbiology / *Mikrobiologi*
( ) Chemical pathology / *Patologi Kimia*
( ) Hematology / *Hematologi*
( ) Histology & Cytology / *Histologi & Sitologi*
( ) Core Laboratory / *Makmal Teras*
( ) Drug Lab & Toxicology / *Makmal Dadah & Toksikologi*
( ) Pre-analytical Counter / *Kaunter Pre-ana*
( ) Satelite Lab / *Makmal Satelit*

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SECTION 2: WORK SAFETY SCALE / *BAHAGIAN 2: SKALA KESELAMATAN KERJA*

Think about your current job. Using the scale below, please answer the following questions.
Fikirkan tentang pekerjaan semasa anda. Jawab soalan-soalan berikut dengan berpandukan skala di bawah:

Strongly Disagree *Sangat Tidak Setuju*	Disagree *Tidak Setuju*	Neutral Neutral	Agree *Setuju*	Strongly Agree *Sangat Setuju*
1	2	3	4	5

I. Job Safety / *Keselamatan Kerja*

Think about your job. Do you agree or disagree that each of the following phrases describes your job? Circle one answer for each statement using the scale at the top of the page.
Fikirkan tentang pekerjaan semasa anda. Sejauh manakah anda bersetuju atau tidak bersetuju dengan setiap kenyataan tentang pekerjaan anda di bawah? Bulatkan setiap jawapan anda dengan berpandukan skala yang diberi di atas.

1	I think my job is dangerous / *Kerja saya berbahaya*	1	2	3	4	5
2	I think my job is safe / *Kerja saya selamat*	1	2	3	4	5
3	I think my job is hazardous / *Kerja saya membawa ancaman*	1	2	3	4	5
4	I think my job is risky / *Kerja saya berisiko*	1	2	3	4	5
5	I think my job is unhealthy / *Kerja saya tidak sihat*	1	2	3	4	5
6	I think my job could get hurt easily / *Kerja saya mudah membawa kecederaan*	1	2	3	4	5
7	I think my job is unsafe / *Kerja saya tidak selamat*	1	2	3	4	5
8	I'm fear for health with my job / *Saya risau pekerjaan saya boleh memudaratkan kesihatan*	1	2	3	4	5
9	There's chance of death with my job / *Kerja saya berkemungkinan membawa kematian*	1	2	3	4	5
10	I think my job is scary / *Kerja saya menakutkan*	1	2	3	4	5

II. Coworker Safety / *Keselamatan Rakan Sekerja*

Think about the people you work with. Do you agree or disagree that each of the following phrases describes these people? Circle one answer for each statement using the scale at the top of the page.
Fikirkan tentang rakan sekerja anda. Sejauh manakah anda bersetuju atau tidak bersetuju sama ada dengan setiap kenyataan yang menggambarkan rakan sekerja anda di bawah? Bulatkan setiap jawapan anda dengan berpandukan skala yang diberi di atas.

1	My coworker(s) ignore safety rules / *Rakan sekerja saya mengabaikan peraturan keselamatan*	1	2	3	4	5
2	My coworker(s) don't care about other's safety / *Rakan sekerja saya tidak mengambil berat tentang keselamatan orang lain*	1	2	3	4	5
3	My coworker(s) pay attention to safety rules / *Rakan sekerja saya memberi perhatian kepada peraturan keselamatan*	1	2	3	4	5
4	My coworker(s) follow safety rules / *Rakan sekerja saya mematuhi peraturan keselamatan*	1	2	3	4	5
5	My coworker(s) look out for others' safety / *Rakan sekerja saya mengambil berat tentang keselamatan orang lain*	1	2	3	4	5
6	My coworker(s) encourage others to be safe / *Rakan sekerja saya menggalakkan orang lain supaya bekerja dengan selamat*	1	2	3	4	5
7	My coworker(s) take chances with safety / *Rakan sekerja saya tidak menitikberatkan soal keselamatan*	1	2	3	4	5
8	My coworker(s) keep work area clean / *Rakan sekerja saya memastikan tempat kerja bersih*	1	2	3	4	5
9	My coworker(s) is safety-oriented / *Rakan sekerja saya mengorientasikan keselamatan*	1	2	3	4	5
10	My coworker(s) don't pay attention / *Rakan sekerja saya tidak menumpukan perhatian semasa bekerja*	1	2	3	4	5

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Strongly Disagree *Sangat Tidak Setuju*	Disagree *Tidak Setuju*	Neutral Neutral	Agree *Setuju*	Strongly Agree *Sangat Setuju*
1	2	3	4	5

III. Supervisor Safety / *Keselamatan Penyelia*

Think about your immediate supervisor. Do you agree or disagree that each of the following phrases describes your immediate supervisor? Circle one answer for each statement using the scale at the top of the page.
Fikirkan tentang penyelia terdekat anda. Sejauh manakah anda bersetuju atau tidak bersetuju dengan setiap kenyataan yang menggambarkan penyelia terdekat anda di bawah? Bulatkan setiap jawapan anda dengan berpandukan skala yang diberi di atas.

1	My supervisor praises safe work behavior / *Penyelia saya memuji perilaku kerja yang selamat*	1	2	3	4	5
2	My supervisor encourages safe behavior / *Penyelia saya menggalakkan perilaku yang selamat*	1	2	3	4	5
3	My supervisor keeps workers informed of safety rules / *Penyelia saya sentiasa memaklumkan peraturan keselamatan kepada pekerja*	1	2	3	4	5
4	My supervisor rewards safe behavior / *Penyelia saya memberi ganjaran terhadap perilaku yang selamat*	1	2	3	4	5
5	My supervisor involves workers in setting safety goals / *Penyelia saya melibatkan pekerja dalam menetapkan matlamat keselamatan*	1	2	3	4	5
6	My supervisor discuss safety issues with others / *Penyelia saya membincangkan isu keselamatan dengan orang lain*	1	2	3	4	5
7	My supervisor updates safety rules / *Penyelia saya mengemaskini peraturan keselamatan*	1	2	3	4	5
8	My supervisor trains workers to be safe / *Penyelia saya melatih pekerja supaya bekerja dengan selamat*	1	2	3	4	5
9	My supervisor enforces safety rules / *Penyelia saya menguatkuasakan peraturan keselamatan*	1	2	3	4	5
10	My supervisor acts on safety suggestions / *Penyelia saya mengambil tindakan atas cadangan berkaitan hal keselamatan*	1	2	3	4	5

IV. Management Safety Practices / *Amalan Keselamatan oleh Pengurusan*

Think about your management. Do you agree or disagree that each of the following phrases describes your management? Circle one answer for each statement using the scale at the top of the page.
Fikirkan tentang pihak pengurusan anda. Sejauh manakah anda bersetuju atau tidak bersetuju dengan setiap kenyataan yang menggambarkan pengurusan anda di bawah? Bulatkan setiap jawapan anda dengan berpandukan skala yang diberi di atas.

1	The management provides enough safety training programs / *Pengurusan menyediakan program keselamatan yang mencukupi*	1	2	3	4	5
2	The management conducts frequent safety inspection / *Pengurusan sering membuat pemeriksaan keselamatan*	1	2	3	4	5
3	The management investigates safety problems quickly / *Pengurusan menyiasat masalah berkaitan keselamatan dengan segera*	1	2	3	4	5
4	The management rewards workers that work safe / *Pengurusan memberi ganjaran kepada pekerja yang bekerja dengan selamat*	1	2	3	4	5
5	The management provides safe equipment / *Pengurusan menyediakan alat-alat keselamatan*	1	2	3	4	5
6	The management provides safe working conditions / *Pengurusan menyediakan suasana bekerja yang selamat*	1	2	3	4	5
7	The management responds quickly to safety concerns / *Pengurusan segera bertindak balas terhadap perkara berkaitan dengan keselamatan*	1	2	3	4	5
8	The management helps maintain clean work / *Pengurusan membantu mengekalkan kebersihan di tempat kerja*	1	2	3	4	5
9	The management provides safety information / *Pengurusan menyediakan maklumat berkaitan hal keselamatan*	1	2	3	4	5
10	The management keeps workers informed of hazards / *Pengurusan mewar-warkan keadaan berbahaya kepada pekerja*	1	2	3	4	5

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Strongly Disagree *Sangat Tidak Setuju*	Disagree *Tidak Setuju*	Neutral Neutral	Agree *Setuju*	Strongly Agree *Sangat Setuju*
1	2	3	4	5

V. Safety Program (Policies) / *Program dan Polisi Keselamatan*

Think about your safety programs at work. Do you agree or disagree that each of the following phrases describes this safety program? Circle one answer for each statement using the scale at the top of the page.
Fikirkan tentang pelaksanaan program keselamatan di tempat kerja anda. Sejauh manakah anda bersetuju atau tidak bersetuju dengan setiap kenyataan berkaitan dengan program keselamatan di bawah? Bulatkan setiap jawapan anda berpandukan skala yang diberikan di atas.

1	The safety program (policies) are worthwhile / *Program (polisi) keselamatan bermanfaat*	1	2	3	4	5
2	The safety program (policies) help prevent accidents / *Program (polisi) keselamatan membantu mencegah kemalangan*	1	2	3	4	5
3	The safety program (policies) are useful / *Program (polisi)keselamatan berfaedah*	1	2	3	4	5
4	The safety program (policies) are good / *Program (polisi) keselamatan adalah bagus*	1	2	3	4	5
5	The safety program (policies) are first-rated / *Program (polisi) keselamatan adalah yang terbaik*	1	2	3	4	5
6	The safety program (policies) are unclear / *Program (polisi) keselamatan tidak jelas*	1	2	3	4	5
7	The safety program (policies) are important / *Program (polisi) keselamatan penting*	1	2	3	4	5
8	The safety program (policies) are effective in reducing injuries / *Program (polisi) keselamatan berkesan mengurangkan kecederaan*	1	2	3	4	5
9	The safety program (policies) don't apply to my workplace / *Program (polisi) keselamatan tidak sesuai diaplikasikan di tempat kerja saya*	1	2	3	4	5
10	The safety program (policies) do not work / *Program (polisi) keselamatan tidak berkesan*	1	2	3	4	5

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SECTION 3: COMPLIANCE WITH SAFETY BEHAVIOR
BAHAGIAN 3: KEPATUHAN TERHADAP PERI LAKU SELAMAT

Think about your current job. Using the scale below, please answer the following questions.
Fikirkan tentang pekerjaan semaa anda., Sila jawab soalan-soalan yang disenaraikan dengan berpandukan skala di bawah.

Never *Tidak Pernah*	Seldom *Jarang-jarang*	Sometimes *Kadang-kala*	Often *Kerap Kali*	Always *Selalu*
1	2	3	4	5

1	Never eat, drink or smoke while working in laboratory / *Tidak makan, minum atau merokok semasa bekerja di makmal*	1	2	3	4	5
2	Keep my work area clean and decontaminate workbench at the end of working day / *Memastikan tempat kerja saya bersih dan mendekontaminasikan meja kerja selepas tamat waktu bekerja*	1	2	3	4	5
3	Wear lab coat or overalls or gown when working in the laboratory / *Memakai kot makmal atau pakaian pelindung apabila bekerja di makmal*	1	2	3	4	5
4	Wear protective eye-shield whenever there is a possibility of splash / *Memakai pelindung mata di mana kemungkinan percikan berlaku*	1	2	3	4	5
5	Wear disposable glove for all hazard work and whenever there is a risk of contamination / *Memakai sarung tangan (pakai buang) untuk semua kerja bahaya dan berisiko terhadap kontaminasi*	1	2	3	4	5
6	Use a biosafety cabinet when work with specimens that may produce infectious aerosols / *Menggunakan kabinet keselamatan biologi semasa mengendalikan spesimen yang mungkin menghasilkan aerosol berjangkit*	1	2	3	4	5
7	Never do mouth pipetting / *Tidak menggunakan mulut dalam hal mempipet*	1	2	3	4	5
8	Dispose of sharp objects into a sharp container / *Membuang objek tajam ke dalam bekas khas objek tajam*	1	2	3	4	5
9	Dispose all potentially contaminated materials into a yellow biohazard bag / *Membuang semua bahan yang berkemungkinan tercemar (kontaminasi) ke dalam beg kuning biohazard*	1	2	3	4	5
10	Know and understand the appropriate procedures in the event of an emergency / *Mengetahui dan memahami prosedur kecemasan*	1	2	3	4	5

END OF QUESTIONNAIRE / *KAJI SELIDIK TAMAT*

THANK YOU / *TERIMA KASIH*

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APPENDIX B

UUM KUALA LUMPUR
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50300 KUALA LUMPUR
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Laman Web (Web): http://uumkl.uum.edu.my

"MUAFAKAT KEDAH"

Our Ref : UUM/UUMKL/P-39/133
Date : 22nd December 2016

TO WHOM IT MAY CONCERN

COLLECTION OF DATA FOR RESEARCH PURPOSES

We are pleased to inform you that the following individual is UUM Kuala Lumpur student who is presently pursuing his Master of Science Occupational Safety and Health Management. She is required to collect data from your organization as a requirement for the BPMZ69912 Research Paper courses that she is pursuing this semester.

No.	Name	Matric No.	I/D No.
1.	Kong Sau Mun	820090	830121145488

Since she has chosen your organization as her assignment, we would be most grateful if you could render all assistance to her to carry out the project successfully.

Please be informed that the data collected is purely for academic purposes and we assure you that all information or data will be kept strictly confidential.

We really appreciate your kindness and cooperation in the above matter.

Thank you.

"SCHOLARSHIP, VIRTUE AND SERVICE"

Sincerely yours,

DR. AHMAD RIZAL BIN MAZLAN
Director
UniversitiUtara Malaysia
Kuala Lumpur (UUMKL)