# THE LEADING FACTORS OF WORKING AT HEIGHT'S ACCIDENT AMONG CONSTRUCTION WORKERS IN KOTA BHARU, KELANTAN

by

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## LIST OF ABBREVIATIONS AND SYOMBLS

| | |
|---|---|
| < | Less Than |
| > | More Than |
| % | percentage |
| df | Degree of Freedom |
| et al | Et alia (others) |
| *p* | *p* value |
| R | Correlation value |
| AKSB | Air Kelantan Sdn. Bhd. |
| DOSH | Department of Occupational Safety and Health |
| FMA | Factory and Machinery Act |
| ft | Feet |
| HIOSH | Hawaii Occupational Safety and Health Division |
| HSC | Health and Safety Commission |
| HSE | Health, Safety and Executive |
| ICL | Imperial College London |
| ILO | International Labour Organization |
| MILD | Manitoba Labor Imigration Divison |
| OHS | Occupational Health & Safety |
| OSHA | Occupational Safety and Health Act |
| PMR | Penilaian Malaysia Rendah |
| PPE | Personal Protective Equipment |
| SDN. BHD. | Sendirian Berhad |
| SHO | Safety and Health Officer |
| SRP | Sijil Rendah Pelajaran |

| | |
|---|---|
| SPM | Sijil Pelajaran Malaysia |
| STPM | Sijil Tinggi Pelajaran Malaysia |
| SPSS | Statistical Package for Social Sciences |
| UA | Ukraine |
| UK | United Kingdom |
| USD | US Dollar |
| USA | United States American |
| US | United States |

# FAKTOR-FAKTOR PENYUMBANG KEPADA KEMALANGAN SEMASA BEKERJA DI TEMPAT TINGGI DALAM KALANGAN PEKERJA PEMBINAAN DI KOTA BHARU, KELANTAN.

## ABSTRAK

Pada masa kini, kadar kemalangan apabila bekerja di tempat tinggi sangat membimbangkan. Tujuan kajian ini dijalankan dengan tujuan untuk mengkaji faktor yang menyebabkan kemalangan apabila bekerja di tempat tinggi dalam kalangan pekerja pembinaan di Kota Bharu, Kelantan. Kajian ini dijalankan untuk mengkaji perkaitan di antara umur, keadaan kerja dan prosedur kerja dengan kemalangan apabila bekerja di tempat tinggi. Seramai 90 orang pekerja di tapak pembinaan merupakan responden Borang soal selidik digunakan dalam kajian ini yang mengandungi bahagian A (data demografi), bahagian B (keadaan kerja), dan bahagian C (prosedur kerja). Ujian Chi Square, ujian Korelasi Pearson dan ujian Korelasi Spearman digunakan untuk menjawab objektif kajian. Hasil kajian ini menunjukkan bahawa terdapat hubungan yang signifikan bagi prosedur kerja untuk ujian Kolerasi Spearman ($p = 0.019$) Namun tiada hubungan yang signifikan antara umur ($p = 0.144$), keadaan kerja ($p = 0.117$), ($p = 0.685$) dan prosedur kerja ($p = 0.097$) dengan kemalangan apabila bekerja di tempat tinggi. Faktor kemalangan bekerja di tempat tinggi yang dikaji dalam kalangan pekerja pembinaan di Kota Bharu, Kelantan berkait dengan prosedur kerja. Oleh itu, untuk mengurangkan kemalangan daripada berlaku disebabkan oleh prosedur kerja, langkah seperti memastikan pekerja memakai alat lindung diri perlu diambil. Selain itu pemeriksaan dan penyelenggaraan peralatan kerja di tapak pembinaan perlu diberi penekanan yang lebih tinggi bagi mengurangkan risiko jatuh dalam kalangan pekerja.

# THE LEADING FACTORS OF WORKING AT HEIGHT'S ACCIDENT AMONG CONSTRUCTION WORKERS IN KOTA BHARU, KELANTAN

## ABSTRACT

Nowadays, the accident rate when working at high places is a concern. The aim of this research was to study the factors that lead to accident while working at height among construction workers in Kota Bharu, Kelantan. This study was conducted in order to identify the relationship between age, working condition and work procedure with accident during working at height. There were on 90 workers at a construction site become a respondent. The questionnaire was used in this study which consists of section A (demographic data), section B (working condition) and section C (work procedure). A Chi Square test, Pearson Correlation test and Spearman Correlation test were used to answer the objectives of the study. The finding showed that there were significance for relationship between work procedures with accident during working at height for Spearmen Correlation test ($p = 0.019$). However, there were no significance relationship between age ($p = 0.144$), working condition ($p = 0.117$), ($p = 0.685$) and work procedure ($p = 0.097$) with accident during working at height. Factor of accidents due to working at height among construction workers in Kota Bharu, Kelantan was found related to the work procedure. Therefore, to reduce the accidents from occurring due to working procedure, the initial steps such as ensure the workers wear personal protective equipment should be taken. Besides that, inspection and maintenance of equipment should be emphasized to reduce the risk of fall among the workers.

# CHAPTER 1

# INTRODUCTION

## 1.1 Study Background

The development process of country plays a big role in the construction industry. The successful development would contribute towards the economic growth generating additional demands for construction activities. The industry construction is a very active and booming industry where as one of the highest contirbuting toward the countary's economy. However, such achievements have also contributed much towards the safety issues where statistics showed that this industry has earned the reputation of being a highly hazardous industry due to its highest fatality rates, (Dayang & Gloria, 2011). Aditionally, the important issues related of accidents in construction project in many countries was must properly handle. The phenomena makes the construction industry has a bad image of risky place of accidents (Sawacha, Naoum, & Fong, 1999). The nature of construction project itself has pontential hazards of accidents since its uniqueness, open space, exposure to weather, involving many unskilled labours, tight schedule of short targeted project duration, workers turn over and working at height, confined space and psychologically and physically vulnerably working environment (Chi *et al.*, 2004; Lipscomb *et* al. 2006; & Imriyas *et al.*, 2007).

Based on Factory and Machinery Act (Safety, Health & Welfare) Regulation 1970 in Regulation 12, working at height stated that where any person is required to work at a place from which he will be liable to fall a distance of more than ten feet (above 3 meters), means must be provided his safety and such menas shall where praticable include the use of safety belts or ropes. Yusuf *et al.* (2011) reported the accident the

accident can be defined as something that is unplanned, uncontrolled, and in some way undesirables and also it disturb the formal functions of a person or persons and causes injury or near miss. During an accident a person's body comes into contact with or is exposed to some object. Public health risk is significant fall accidents and a leading cause of nonfatal and fatal injuries among construction workers worldwide. Moreover, to prevent falls in the construction industry need a more comprehensive understanding of causal factors leading to fall incidents is essential (Hu *et al.* 2009). There are many factors for research and variety of proposed methodology as well as locations will improve understanding of the nature of fall accidents including preventive actions to be developed for avoiding, reducing and eliminating potential hazards to fall accidents (Hu, *et al.* 2009).

According by the Health Safety and Executive UK (2014) falls from height a one of the biggest causes of workplace fatalities and major injuries. Work at height means work in any place where, if precautions were not taken, a person could fall a distance liable to cause personal injury. Based on the Department of Occupational Safety and Health (DOSH) (2015), the potential to fatalities and injury when working at height was the highest compared with other accidents. Working at height was classified as one of the top most hazardous areas of occupation in the world. It is therefore imperative to provide adequate safety training to the workforce for height work safety (DOSH, 2015). The most common fall locations listed in order of occurrences as follows: off roof, collapse of scaffolding, off scaffolding, collapse of structure, through floor opening, off ladder, off structure, through roof opening, off edge of open floor, and off beam (Hinze & Russell 1995).

## 1.2 Problem Statement

Based on the Bomel Limited (2003), the Health and Safety Commission (HSC) established eight Priority Programmes within its Strategic Plan. Fall from height, agriculture, construction and workplace transport were four of these priority programmers. The fatal injury accidents in UK industry occurred as a result of falls from height was 31 % and injury accident from height is accounted 20% over the last five years around. According the HSE UK (2012/2013), the highest factor that lead to fatality which is fall from heights on the construction site which was totally 59% compared other incident such as electricity, hit by vehicle and struck by object of fall. Fall accidents are the most frequent accident in construction projects. The result for the fall accident in USA, between 1992 to 2006 fall contribute 32% of fatality (Dong, *et al.* 2009)

Bentley, *et al.* (2006) reported in New Zealand, fall from different height was also the most contributory accident in the industry. For the injuries at China construction industry, the rate accident accounts for 51% (Yung, 2009). Besides that, more than 47% represented of total fatality caused by fall accidents in 2004 in Hong Kong (Chan, *et al.* 2008). Chi & Wu (1997) reported fall accidents in Taiwan more than 30% of fatalities. It has been concluded that fall was the most dangerous accident in many countries (Lipscomb *et al.*, 2003; Horwitz & Mccall, 2004). The fall accident has a costly impact to the industry. Annual cost associated with fall accidents in UA are around USD 6 billion in 2000 (Courtney, *et al.* 2001). In Holland, total medical cost of handling accidents is almost USD 11 Billion in 2004 while 44% of the total cost incured for financing fall accidents (Meerding, & Beeck, 2005).

## 1.3 Research Objectives

### 1.3.1 General Objectives

To identify the factors of injuries or fatalities that cause by accident when working at height among construction workers, in Kota Bharu, Kelantan.

### 1.3.2 Specific Objectives

1) To identify the relationship between age with the accident during working at heights.
2) To identify the relationship between working condition with the accident during working at height.
3) To determine the relationship between work procedures with the accident during working at height.

## 1.4 Research Questions

1. What are the causes of factor injuries or fatalities of working at height among workers?
2. What is the relationship between ages with working at height among workers?
3. What is the relationship between working condition and working at height among workers?
4. What is the relationship between work procedures when working at height among workers?

## 1.5 Hypothesis

Hypothesis 1:

*Null hypothesis:*

There is no significant association between age and working at height among construction workers.

Hypothesis 2:

*Null hypothesis:*

There is no significant association between working condition and working at height among construction workers.

Hypothesis 3:

*Null hypothesis:*

There is a no significant association between work procedures and working at height among construction workers.

*Alternative hypothesis:*

There is a significant association between work procedures and working at height among construction workers.

## 1.6 Significance of study

This study not only gave benefits to researcher and students, but also to the company that involved in construction industry and also to the construction workers. The purpose of this is to identify the factor that lead to incident among workers in order to get a better understanding regarding safety issues when working at height place. Apart from that, this study also can be the initiator of need implementation of rules, regulations and guidelines addressing work at heights among workers. Beside, the study is also intended to develop awareness among workers when working at height such as campaign for safety and health, talk programme and etc.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 Definition of Working at Height

The biggest cause of fatalities and major injuries are a working at height remains one that includes falls from ladders and through fragile surfaces. Work at height means work in any place where, if there were no precautions in place, a person could fall a distance liable to cause personal injury for example a fall through a fragile roof (Health, Safety and Executive).

## 2.2 Hazard and Risk Control for Working at Height

According to the NHS Heath Scotland (2014) explained about the hazard and risk control at height. There are activities involving a risk injury such as steel workers erecting the steel framework of a building, scaffolders striking a scaffold, roofers cladding the roof of a steel-framed building, demolition workers dismantling machinery on the roof of a building, painters painting a lamp-post or a steel-span footbridge and work at height.

Other than that for basic hazards on working at height in distance fall which was the distance a person or object can fall will have a direct bearing on the severity of injury or damage, roofs was consist of construction or maintenance of roofs, for example are replacing tiles, gutter cleaning, chimney repairs and re-pointing while weather which was can increase the risk associated with working at height such as rain or freezing, high winds and cold condition can increase of accident when working at height. This

simple hierarchy can be followed to prevent falls such as avoid of work at height, carry out work from existing place of work, provide a safe working platform with guardrails, fences, toe boards, and etc that are strong enough to prevent fall, where is not possible, provide properly installed personnel equipment such as rope access and provide equipment which restrain or arrest fall, for example is safety harness or safety nets. (NHS Heath Scotland, 2014)

### 2.3 Historical Accident for Working at Height in the Construction Industry

Accident causation model was pioneered by Heinrich in 1930, which discussed accident causation theory, the interaction between man and machine, the acts, the management role in accident prevention, the costs of accident, and the effect of safety on efficiency. Based theory Heinrich, there were five dominoes namely ancestry and social environment, fault of a person, unsafe acts and condition, accident, and injury. There five dominoes model suggested that through inherited or acquired undesirable traits, people may commit unsafe acts or cause the existence of mechanical or physical hazards that result in injury (Abdelhamid & Everett, 2000).

DOSH (2016), most recently recorded a worrying rise of accidents working at height in the construction industry which always caused severe and fatal accidents. It always occurred every month in the year 2014 until 2016. Appendix A list the accidents recorded by DOSH and Appendix B shows the factors that lead to accidents in working at height.

## 2.4 Age Factor

According to Work Safe Bc (2014) stated that over the 10-year period, 2004-2013, falls from a height were on the decline for those under in the 25–54 age group, but on the rise for those 55 and older. During the period workers between 25-54 years old represented the majority of workers who suffered an injury as a result of a fall from a height, totaling 71%. Older age groups are much more likely to suffer a serious or fatal injury as a result of a fall from height. The nature of related injuries when working at height are fracture, back strains and other strains such as ankle, legs, wrists, shoulder and feet.

Based on Safe work Australia (2013) about the 70% workers aged 45 years and over made up those who died following a falls from height. The highest fatality rate over the 2008 until 2011 period was recorded by workers aged 65 years.

Fatih (2014) stated that every heavy-duty work, usually given to the younger workers. The age groups of 18-24 and 25-39 were exposed to 44% and 52% of occupational accidents, respectively. More than 96% exposed in accident was in the age group of 18-39, means that young workers sustain injuries more. Worker, who are above 40 years old, generally do not work on active duties. Skilled workers, foremen, chiefs, technicians and administrative personnel exposed to less occupational accidents less.

Yusuf et al. (2011) workers who were between 20 until 30 years old are riskier to get accidents both due to their youth behaviours and also their higher proportions who working in the construction projects.

## 2.5 Working Condition Factor

According the Scandinavian Journal of Work Environment and Health (2011) stated that ladder fall comprise 16% of all US workplace fall-related fatalities, and ladder use may be particularly hazardous among older workers. Other than that, the majority of portable ladder falls occurred at an average height of 7.5 feet (which is 35% of falls originated from less than 5 feet and 5% from more than 20 feet). The main diagnoses were fractures, strains or sprains, and contusions or abrasions. According the Safe Work Australia (2014) scaffold is a temporary structure erected to support access or working platform. Scaffold are normally used in construction work so workers have a safe, stable work platform when work cannot be done at ground level or on a finished floor.

Based on International Labour Safety (1999) stated that the safe scaffolding must be of enough strength to support the weight and stress which the processes and workers will place upon it. It also must be designed to prevent the fall of workers and materials. Besides, the deficiencies in the project design phase causing of construction accidents (Toole, 2005). Scaffolding accident also caused by heavy moving equipment, overhead tools and materials, lack of proper assembly or inspection, wind, heights, and worker fatigue (Paul, 2013). In Hong Kong, Wong *et al.* (2004) stated that most of the fall accidents were caused by falling from ladders, scaffold, working platforms and opening roofs. The most common accidents types in Kuwait were tools accident, falls from ladders and falls from scaffolding which happened during normal working hours in the summer season (Altabtabai, 2002). Reported by Farroqi *et al.* (2008) stated that in pakistan the workers fall from height caused by lack of safety and were due to weak scaffolding. The falling objects, electrocution, falls during assembly or disassembly,

falls while working, overturns, falls while climbing, and construction deficiencies is caused by scaffolding accidents. (Paul 2001)

Reported by Mongarkar & Varghese, (2012) and Macnoe *et al.* (2005) inappropriate work practices; inappropriate construction of scaffolding including planking; safety equipment not used and unexpected force shifted scaffolding was the main factors of the scaffold accidents. Heckmann (1995) stated that concluded that scaffold accidents usually concerned the tubular welded frame type associated with masonry construction. It was found that scaffold injury incidents occur in two ways which were falls from scaffolds, or scaffold collapses. (Halperin & Mccan, 2004). Besides that, falls from ladders was the second leading cause for work-related fatalities in the US construction industry. A significant portion of these incidents occurs at building-construction-and-maintenance worksites during the use of extension ladders (Hsio *et al.* 2008).

## 2.6 Work Procedures Factor

Reported by Huang & Hinze, (2003) stated that lack of safety training was found as contributing factor for most of the fall accidents. Providing adequate fall protection equipment and training to the employees can reduce the number of falls. More than 30% contributed of the fall accidents were caused by inadequate and inappropriate use of personal protective equipment (PPE). According to the Eastern School District (2012) the certified fall protection training program must completed by the workers. Other than that, at least 2 workers must be present when a restraint or arrest system is used and also keep a minimum to a free fall distance. The workers also attach the lanyard directly overhead, where practicable and make sure that a fall arrest system is closed to a suitable anchorage point. Besides that, take into consideration obstructions that are below the work area and also make sure those barricades, warning tape and signs identify restricted areas. Accidents that occur when workers no follow the instruction such as do not use a harness or lanyard that has arrested a fallen worker and do not attach two lanyards together to make them longer.

In addition, based on Imperial College London (2013) safe work procedures that consist of firstly must identification of fall hazards which is workers must determined if will be exposed to the hazard of falling from a work area that is 3 meters (10 ft) or more above the nearest safe surface or water. Secondly hazard assessment which is if a worker is exposed to any of the above noted fall hazards, then adequate work platforms or staging must be provided where it is practical to do so, if not at least one of the following control measures must be implemented. Thirdly is fall arrest system, means that the worker must identify and assemble the necessary components and must calculate the total fall distance, make sure that an adequate clearance distance is

available and worker make sure that the harness is adjusted to fit properly and is rated for a weight. A full body harness and appropriate lanyard must be secured to an anchorage point, lifeline or static line. Next, do the inspection. Before each work shift a fall arrest system must be inspected and any defects must be immediately reported (ICL, 2013).

Tam *et al.* (2004) did a study in China and noticed that the causes of accidents were due to poor safety awareness from top leaders, lack of training, poor safety awareness of project managers, reluctance to input resources for safety, reckless operation, lack of certified skill labor, poor equipment, lack of first aid measures, lack of rigorous enforcement of safety regulation, lack of organizational commitment, low education level of workers, poor safety conscientiousness of workers, lack of PPE, ineffective operation of safety regulation, lack of technical guidance, lack of strict operational procedures, lack of experienced project managers, shortfall of safety regulations, lack of protection in material transportation, lack of protection in material storage, lack of teamwork spirits, excessive overtime work for labor, shortage of safety management manual, lack of innovative technology, and poor information flow.

Lubega *et al.* (2000) concluded the causes of accidents in Uganda were mainly due to lack of awareness of safety regulations, lack of enforcement of safety regulations, poor regard for safety by people involved in construction projects, engaging incompetent personnel, non-vibrant professionalism, mechanical failure of construction machinery or equipment, physical and emotional stress, and chemical impairment. Additionally, accidents can occur when workers do not follow the instruction for the safe work procedures during works at heights. Based on the DOSH (2016), most of the workers get fatalities were caused by no safe work procedures.

Fatih (2014) stated that dangerous behaviors that may cause an accident and the places at which an accident occur are investigated within the scope of the research. According to the results, 67% is the unsafe behavior is the main reason of the accidents occur which can be defined as not to followed the rules despite the safety measures are taken. 12% is not to use the personal protective equipments is the second most common cause of accidents. While, 8% is use the equipment and tools in a dangerous way can cause accidents. 'Working dangerously fast' and 'unsuitable stowing and loading' are also important reasons of accidents. In turkey 35 % of these deaths occur as a result of 'falling from height'.

Table 2.3 shows the result of the workers that do nat used PPE to prevent slipping was ranked in the first position. Besides, workers dot use of ladders for doing the task and they also working moving between the platform by jumping.

Table 2.3: RII and ranks of factors related to the workers behavior group

| Factor | RII | Rank |
|---|---|---|
| Workers do not take personal protective equipment (PPE) that prevents slipping. | 0.897 | 1 |
| Workers moving between the platforms by jumping and they do not use ladders. | 0.863 | 2 |
| Workers working on the scaffolding during fatigue, stress and illness. | 0.837 | 3 |
| The work is continued during bad weather like rain and severe heat. | 0.7924 | 4 |
| The work is continued during the movement of suspended scaffolding. | 0.696 | 5 |
| Are not taking into account the electrical connections and prevention while working. | 0.6276 | 6 |
| All factors | 0.785 | |

(Source : Enshassi & Shakalaih, 2015)

For the table 2.4 shows the factor of accident can occur. The first rank of the factors related to the personal competencies group was by not working in according to the code used in the erector of scaffolding.

Table 2.4 : RII and ranks of factors related to the personal competencies group

| Factor | RII | Rank |
|---|---|---|
| Are not working in according to the code used in the erection of scaffolding. | 0.8731 | 1 |
| There is no testing, inspection and visit work sites are done by the competent authorities. | 0.873 | 1 |
| No training is given to workers in the field of scaffolding. | 0.727 | 3 |
| No training is given to workers in the field of first aid and safety. | 0.727 | 3 |
| Incentives are not given to workers. | 0.691 | 5 |
| Warning and safety signs are not placed for the workers at the work site. | 0.624 | 6 |
| All factors | 0.752 | |

(Source : Enshassi & Shakalaih, 2015)

# CHAPTER 3

# METHODOLOGY

## 3.1 Study design

The study design for this research was cross-sectional study. A cross-sectional study was also known as prevalence study which was used analyse the data that is collected from a population at one specific point in time. The quantitative component comprises a survey using structured and standardized questionnaires in which the respondents were answered by using a pencil. The questionnaires were conducted in both languages which are Bahasa Malaysia and English. Before answering the questions, respondents must agreed to participate in this study by giving their consent in consent formed.

### 3.2 Study Flowchart

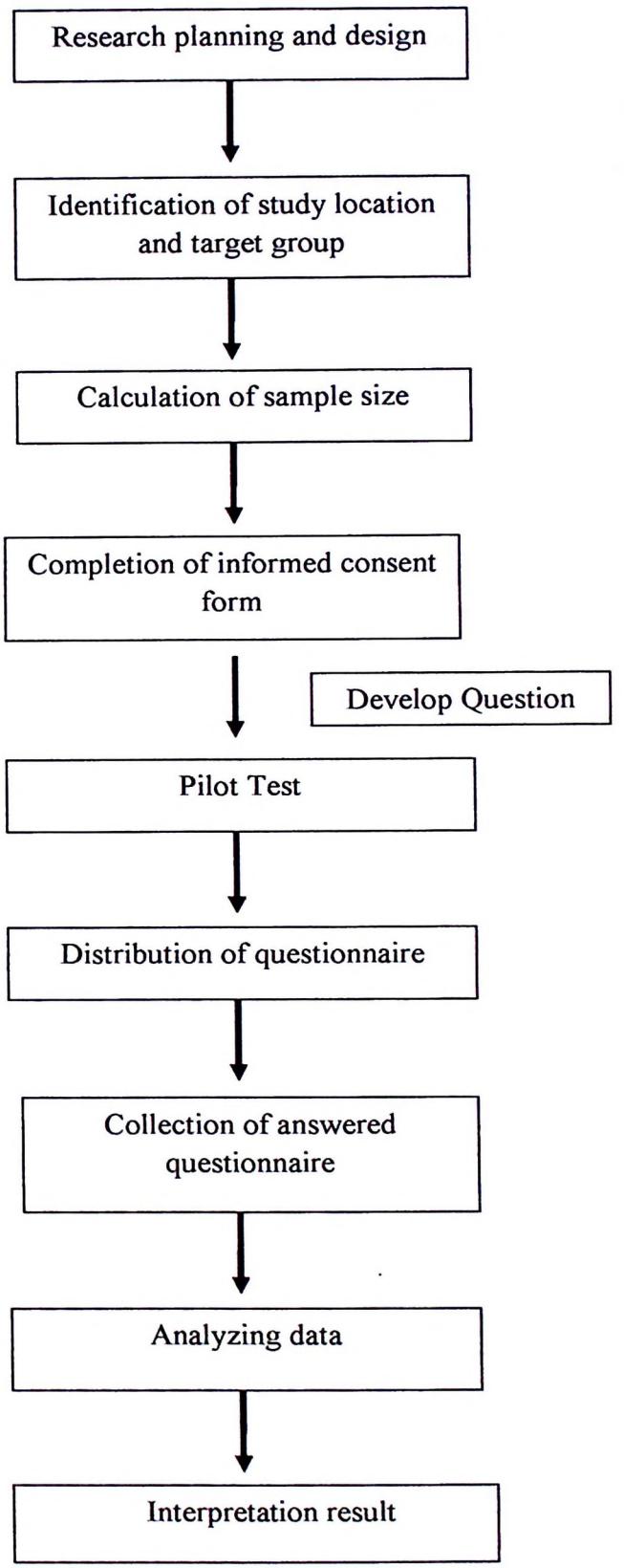


Figure 3.1: Flow chart of study

### 3.3 Study location

This study was conducted at construction site in Kota Bharu, Kelantan. There were three sites that are choosen which were located at Lembah Sireh, Tunjong and Jalan Kuala Krai. The construction project at Lembah Sireh was Aeon Co. (M) Bhd., while at Tunjong was Giant Superstore Sdn. Bhd and the construction of office building of Air Kelantan Sdn. Bhd. (AKSB) which was located at Jalan Kuala Krai. The main factors of chosen three sites because all project involving the same height which exposed to the workers to the height hazard. The work carried out such as plastering, wiring (air conditioner), painting and etc. Other than that, all projects were in progress compared with other company which is the project where delay at that time. The questionnaire was distributed to the workers at least in three days.

### 3.4 Study Participants

#### 3.4.1 Inclusion and Exclusion Criteria

The respondents in this study were selected based on several criteria. Those criteria were divided into inclusion and exclusion criteria as show in table 3.1

| Inclusion | Exclusion |
|---|---|
| 1. Worker from construction site in Kota Bharu, Kelantan.<br>2. Not less than 20 years old and above.<br>3. Understand both language Bahasa Malaysia and English.<br>4. Agree to participate in this research and signed the consent informed. | 1. Who are not exposed to work at heights<br>2. Respondents that were refused to continue participation or want to drop out in this study due to personal reasons or illness. |

### 3.5 Study Period

This study started from September 2015 until May 2016 and the sample was collected from February until March 2016.

### 3.6 Sample Size Calculation

Based on inclusive and exclude criteria, there were 34 respondents from the Giant Superstore project, and 31 respondents from Aeon Co. (M) Bhd project and 25 total workers for Office AKSB project. The total numbers of respondents for this research were 90 workers. From the total number of respondents, 10% was taken for pilot test (9 respondents).

### 3.7 Sampling Method

The sampling that used for this research is purposive sampling. The participants were selected based on the specific criteria that have been determined.

### 3.8 Research Tools

The instrument for data collection was structured questionnaires which were newly developed and constructed based on the information required. Respondents can tick either in choices YES, NO and NOT SURE boxes in section B (i) and C (i). Besides that, respondents were also given the option to answer the questionnaire in likert scale in section B (ii) and C (ii). The questionnaire was divided into three sections, which

sections A include the information on demographic information. Section B is working condition at construction site and section C is the work procedures at construction site. Section A consists a question on gender, age, sex, marital status, nationality, education background, work position and duration working in construction industry. Each of these had a single box near the answer that needed to be choose and ticked by respondent. Meanwhile section B consists of a question related on working condition with total of question were 15. Section C was including the work procedure. A total of 13 questions were developed and it consisted questions regarding the safety and rules at workplace. Pilot test was done as a preliminary study which was included nine workers from those sites.

### 3.9 Data Collection

A guided questionnaire was conducted among the respondents briefings were also conducted before the respondents were answered the questionnaire. The respondents were asked to sign the consent form before a set of questionnaires were given to them. They were needed to complete section A, B and C in the time given in about 15 minutes.

### 3.10 Data Analysis

All data was analyzed using the Statistical Package for Social Sciences (SPSS) software version 22. The test was used for research was Chi square, Pearson and Spearman Correlation test.

### 3.11 Ethical Issue and Clearance

Before carrying out this study, researchers must obtain permission from the ethics committee of the School of Health Sciences.

### 3.12 Questionnaire Reliability Test

According to Piaw (2011), the acceptable value Cronbach's alpha should range between 0.65 to 0.95. Using Cronbach's alpha test, the reliability value of this questionnaire was 0.86, which is strong positive correlation.

# CHAPTER 4

# RESULTS

## 4.1 Normality Test

Table 4.1: Normality Tests

| Variable | Shapiro-Wilk | | |
|---|---|---|---|
| | Statistic | Degree of Freedom | Sig. |
| Age | 0.856 | 81 | 0.000 |
| Total Working Condition | 0.982 | 81 | 0.332 |
| Total Work Procedure | 0.952 | 81 | 0.004 |

Shapiro-Wilk test was used to known what the result are normality or not normality. If the Ho was normality, therefore was accepted Ho, will be assume normality, but if rejected Ho will be assume not normality. Based on table for test of Normality, Shapiro-Wilk showed that p value for the age is 0.000 therefore p value < 0.05, thus rejected Ho and result become not normal distribution and use non parametric is Spearman Correlation Test. The next is total working condition which is p value is 0.332, therefore p value > 0.05, thus accepted Ho and result become normal distribution and use parametric is Pearson Correlation Test. While for the total work procedure same liked the age, showed that p value is 0.004, therefore p value < 0.05, and thus rejected Ho and the result become not normally distribution and use non parametric test is Spearman Correlation Test.

### 4.2 Socio-demographic information of workers

Table 4.2 shows the item of demographic data included age, sex, marital status, nationality, education background, position and working experienced among respondents.

Table 4.2: Demographic Information of the Respondents

| Characteristics | Frequency (n) | Percentage (%) |
|---|---|---|
| **Age** | | |
| <20 | 4 | 4.9 |
| 21-30 | 37 | 45.7 |
| 31-40 | 29 | 35.8 |
| 41-55 | 10 | 12.3 |
| >56 | 1 | 1.3 |
| **Sex** | | |
| Male | 76 | 93.8 |
| Female | 5 | 6.2 |
| **Marital Status** | | |
| Single | 42 | 51.9 |
| Married | 37 | 45.7 |
| Divorce | 2 | 2.4 |
| **Nationality** | | |
| Malaysian | 39 | 48.1 |
| Bangladeshi | 40 | 49.4 |
| Pakistan | 2 | 2.5 |
| **Education Background** | | |
| SRP/PMR | 12 | 14.8 |