



**A STUDY PATTERN OF CONSTRUCTION OCCUPATION DISEASE
AND NATIONALITY OF THE WORKERS**

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ABSTRACT

The construction industry is vital to the development of any nation, as it strongly contributes to the economic growth of a nation. As such there is a need for the industry stakeholders to comply with necessary law and regulations as relating to safety and health of workers. The construction workers occupation has been recognized as the most dangerous in term of accidents and fatality rates. Construction workers are obliged to work in a poor physical environment, tolerating extreme outdoor temperatures, poor air quality, excessive noise from bulky equipment, various hazards from working at height, poor housekeeping, and exposure to chemicals, and additional factors. Prolonged work under such adverse physical conditions induces stress in construction workers, such as emotional and physical fatigues. In most construction sites, poor safety awareness, lack of skills, unclear safety responsibilities, boring and simple safety activities or education, etc., are major factors affecting workers' performances at construction sites. The construction sector remains unattractive to the young Malaysian due to low level of wages, even for skilled workers. Most Malaysian workers prefer white collar jobs as against working in construction site due to hard work under the sun associated with the job. The danger posed to personal safety by construction work is one of the reasons why Malaysian is unwilling to take up carrier in it. Construction workers play a vital role to the development of any nation through accomplishment of the project construction. All these supporting evidence reflects on the needs to study the pattern of construction occupational diseases and nationality of the workers. The study is criteria based study located in Klang Valley which is an area in Malaysia comprising Kuala Lumpur and its suburbs, and adjoining cities and towns in the state of Selangor. Twenty – four (24) construction companies were selected for the study that meets the research criteria. Descriptive statistic is used in studying the pattern of the construction occupational disease and the nationality of the construction workers accidents. The descriptive statistic were presented according to the construction occupational disease and the nationality of the construction workers accidents and presented in percentage of its total. Malaysia construction industry is a foreign construction workers dominated sector. In Malaysia, noise induced hearing loss is the

leading occupational disease. A good safety practiced can reduced accidents rate at the construction site and local Malaysian workers will be more interested to work in the construction sector. Effective safety management can lead to safer system of construction and reduce the incidence of injuries and work related diseases.

Key Words: occupational disease, nationality, construction workers, accidents rate, safety management.

1.0 INTRODUCTION

The construction industry is vital to the development of any nation, as it strongly contributes to the economic growth of a nation. As such there is a need for the industry stakeholders to comply with necessary law and regulations as relating to safety and health of workers. The poor performance record of safety and health in the construction industry is because the Occupational Safety and Health (OSH) management system is a neglected area and a function that has not been pursued systematically in the construction industry(Bakriet *al.* 2006).The construction workers occupation has been recognized as the most dangerous in term of accidents and fatality rates. Leung,*et al.* (2010) stated that Construction workers are obliged to work in a poor physical environment, tolerating extreme outdoor temperatures, poor air quality, excessive noise from bulky equipment, various hazards from working at height, poor housekeeping, and exposure to chemicals, and additional factors. Prolonged work under such adverse physical conditions induces stress in construction workers, such as emotional and physical fatigues.

According to Sawacha & Daniel (1999),Choudhry& Fang (2008) working under poor physical environment, which causes discomfort to construction workers, subsequently reduces their attention on safety behaviors.The concepts of safety culture and safety climate are important contributions from the behavioural and social sciences to workers understanding of occupational safety. Zohar, (1980) defined Organizational Climate, as a summary of molar perceptions that employees share about their work environments. And Neal and Griffin, (2006) defined perceived safety climate as "individual perceptions of policies, procedures and practices relating to safety in the workplace". In most construction sites, poor safety awareness, lack of skills, unclear safety responsibilities, boring and simple safety activities or education, etc., are major factors affecting workers' performances at construction sites.Realizing the importance of safety awareness within the construction industry, the construction industry development board (CIDB) Malaysia together with the national institute of occupational safety and health (NIOSH) Malaysia is conducting a safety and health induction program for construction workers or popularly known as a Green Card program. This program, according to CIDB is an integrated safety and health training program for all construction workers and personnel, which involves the registration and accreditation of construction personnel to enhance the safety level at a construction site. Similarly the objectives of the program include ensuring that the construction worker is aware of the importance a safe and healthy working place, to provide a basic knowledge of safety and

health at the construction work site and to inform construction workers of the legal requirement in relation to safety and health (CIDB, 2011).

Abdul Rahim, *et al.*, (2011) stated that as of May 2011, Malaysia has approximately 1.9 million foreign workers spread across sectors such as manufacturing (39%), construction (19%), plantation (14%), housemaids (12%), and services (10%), with the rest in agriculture and that the contributing countries by rank are: Indonesia (50.9%), Bangladesh (17.4%), Nepal (9.7%), Myanmar (7.8%), India (6.3%), and the rest from Vietnam. According to Narayanan, (1992), most workers in construction sector are either employed directly by the main employer or hired on contract through a labor intermediary (contractor or kapala) who takes on the responsibility of recruiting the workers, paying them, and otherwise providing for their needs. In Malaysia, the process of employing construction workers through an intermediary constitutes a bulk form of employing immigrant construction workers. This means that the contractor may choose not to comply with labor laws and safety and health standards as contained in the OHSMS 18001 and MS1722 (Narayanan, 1992). Migration of construction workers most especially in South-East Asia is strictly an irreversible trend. In the study conducted by the BWI in October 2007, the evaluation report in “organizing and networking migrant and cross border workers in Asia” implemented with the assistance of FNV-Netherlands from 2004—2007 – revealed that:

- 1 Migrant workers are paid lower wages for the same work done by local workers,
- 2 Despite the lower wages, migrants often have to pay “wrongful deduction” or levies. Needless to say, they do not enjoy “economic benefits” other than their low wages. Their living conditions are often as bad, if not worse than their working conditions.
- 3 Migrant workers are often deprived of labor right, particularly the right to join unions and thus are often unable to protect themselves and their jobs. Moreover, most of these workers often have very little knowledge about their right and entitlements.
- 4 Most employers do not treat migrant workers well i.e abusive practices by employers often start at hiring process. This is often done in connivance with recruitment agents. Furthermore, a lot of migrant workers do not have written employment contracts, employers often hold the passports of their employees some employers even physically abuse their employees and employers are very smart in escaping from a circumventing the law and the bureaucracy.
5. Most government neglects the plight of migrant workers.
6. Problem suffered by migrant workers often begin back home (i.e in sending countries) as sending countries are often developing countries where the unemployment rate is high, nationals leave these countries in search of better economic opportunities. In some cases, workers leave to escape conflicts or war and most of the migrant workers are cheated by recruitment agencies in the sending country.

Moreover it is very difficult for migrant workers to organize themselves into trade unions. The construction sector remains unattractive to the young Malaysian due to low level of wages, even for skilled workers. As explained by the Executive Director of the Malaysian Employers Federation (MEF) most Malaysian workers prefer white collar jobs as against working in

plantation or construction site due to hard work under the sun associated with the two jobs (Bloomberg News, 2005). The danger posed to personal safety by construction work is one of the reasons why Malaysian is unwilling to take up carrier in it. Statistics from the Social Security Organization (SOCSO) have shown that, an average of five thousand accidents occurred on construction sites annually in Malaysia between 2000 and 2001. This figure represents about 5 to 6.5 percent of the total number of accidents reported over the period. Averages of eighty workers were killed in such accidents (Fong, 2006). According to (Narayanan & Lai, 2005), as cited in Abdul Rashid, 1996, that most Malaysian workers chose to emigrate to higher wage jurisdictions like Singapore, Japan, and Taiwan Province of China. In 1993, it was estimated that 150,000 Malaysian were working abroad – most of them illegally – in these three countries and a significant proportion was believed to be construction workers. The demand of both skilled and unskilled workers in the construction sector is due to the rapid economy growth which is at high rate and most especially, the skilled labor and the fact that most skilled Malaysians that left during the recession in the mid-80's refused to return in sufficient numbers had made the immigrant workers rely upon to fill the shortfall in both the skilled and unskilled labor.

Similarly, Bakriet *al.*, (2006) have drawn the attention to the issue of difficulties in achieving “Zero Accident” at the construction site which is due to lack of proper implementation of OSH Management system, which gave rise to poor safety record in most South East Asia countries, as lot of efforts have been made to make their business a more competitive. According to Hari, (2012), that in Malaysia, only the companies that are well established for quite a long period of time are able to compete and have the ability to maintain their standard in the existing situation as regard to safety and health at workplace as such companies have the ability not just to make profit but also to prevent the occurrence of accidents in their construction sites. Zakaria, *et al.*, (2010) emphasis on the advised of the Chairman of NIOSH, Datuk Lee Lam Thye, that all level of management in all sector of industry must give full commitment to achieve a safe and healthy workplace through the promotion of occupational safety and health (OSH) awareness, education, and training for all.

Occupational safety and health (OSH) is aimed at preventing accidents at workplace. Despite the achievement in accident prevention at most construction sites, it has been identified that, accidents still exist in construction sites (Levitt & Samelson, 1993). Safety management relates to the actual practices, roles and functions associated with remaining safe Kirwan, (1998), while Reiman & Rollenhagen, (2011) safety management is associated with the policies, objectives, procedures, methods, roles and functions that aim at controlling hazards and risk in socio-technical systems. According to Vredenburg, (2002), the commitment of the management toward safety management system can manifest itself through job training program, management participation in safety committee, consideration of safety in job design, and review of the pace of work, for example, people working for a supervisor that never mentions safety will make people perceive that safety is not an important issues and they will not place more emphasis on safety at the workplace. Companies that have implemented effective OSH Management system have

reported benefit from increase operational efficiency, reduction in insurance cost and improve in workers retention and satisfaction (Bakri, *et al.*, 2006).

Abdulhamid and Everett (2000) did a study in the United State America classified the causes of accident into human and physical factors. Human factors were due to failed to wear personal protective equipment (PPE); horseplay; operating equipment without authority; operating at unsafe speed; personal factor; remove safety device; serviced moving and energized equipment; took unsafe position or posture; used defective tool or equipment; and other unsafe action. While, physical factors were due to; unsafe act of another person(s); disregard known prescribed procedures; defects of accident source; dress or apparel hazard; environmental hazard; fire hazard; hazardous arrangement; hazardous method; housekeeping hazard; improper assignment of personnel; inadequately guarded; public hazard; and other unsafe conditions. A study on the causes of accidents in Uganda conducted by Lubeeget *al.*, (2000) concluded that the causes of accidents are lack of safety awareness of safety regulation, lack of enforcement of safety regulation, poor regard for safety by people involve in construction projects, engaging incompetent personnel, non-vibrant professionalism, mechanical failure of cconstruction machinery/equipment physical and emotional stress and chemical impairment. Pipitsupaphol and Watanabe (2000) did a study in Thailand construction sites and classified the causes into the most influential factors i.e. unique nature of the industry, job site conditions, unsafe equipment, unsafe methods, human elements and management factors. They further concluded that major immediate causes were due to failure to use personal protective equipment (PPE), improper loading or placement of equipment or supplies, failure to warn co-workers or to secure equipment and improper use of equipment.

Abdul Rahim *et al* (2008) study the causes of occupational accidents in Malaysia construction industry and observed that the major courses of construction accidents are;

1. Management failure (29.2%), such as poor inspection, poor safety policies and lack of safety education programs.
2. Unsafe method (incorrect work procedure) (26.4%), mostly related to incorrect work procedure. This can undermine all the organization's safety and health procedures to be ignored or worse yet.
3. Lack of personal protective equipment usage and worker negligence contributes to the cause of the accident.
4. Unsafe equipment (9.7%)
5. Jobsite condition (11.1%)

What is needed to control the rate of accidents is workers oriented program, popularly known as people-oriented management program, Yanbin and Chao, (2011) defined people-oriented management as the management with people as the focus, and the main objection of which is to inspire initiative, enthusiasm of workers and to let workers work creatively, and to achieve common development between workers and enterprise. People- oriented management is aimed at promoting and protecting an organization working condition in order to protect the life and health

of its workers. Construction workers play a vital role to the development of any nation through accomplishment of the project construction. All these supporting evidence reflects on the needs to study the pattern of construction occupational diseases and nationality of the workers.

2.0 METHODS AND MATERIALS

Quantitative research method was adopted for the study. Creswell (2003), defined quantitative research as the one which the investigator primarily uses both positivist and post positivist claims for developing knowledge on the truth about quantitative measures and employs strategies of inquiry such as experiment and surveys and collection of data on predetermined instrument that yield statistical data. Quantitative research is a research method that relies less on interviews, observations, focus groups, case studies etc, but is much focused on the collection and analysis of numerical data and statistical.

The study is a criteria based study, the following were the criteria set for the study:

1. The construction firm must be built/civil engineering, construction firm.
2. The construction firm or company must be more than twenty - five (25) years in civil/building construction work.
3. The construction firm must be certified ISO 9000 G7 contractors registered with CIDB Malaysia.
4. The construction occupational diseases must be investigated and approved by Department of Occupational Safety and Health (DOSH) Malaysia.

The location of the study area was in the Klang Valley which is an area in Malaysia comprising Kuala Lumpur and its suburbs, and adjoining cities and towns in the state of Selangor. Another name for Klang Valley is a Kuala Lumpur Metropolitan Area or Greater Kuala Lumpur. It is geographically delineated by Titiwangsa Mountains, to the north and east and the Strait of Malacca to the west. The Area is referred to as the heartland of Malaysia's industry and commences ([htt://www.worldgazetteer.com](http://www.worldgazetteer.com)). As at 2012, the Klang Valley is home to roughly 7.5million people ([htt://www.worldgazetteer.com](http://www.worldgazetteer.com)).Twenty- five (25) construction companies were identified that meet the study criteria and as such twenty – four (24) of the construction companies were selected for the study. The selection is based on sample selection rules of (Krejcie and Morgan, 1970).

Descriptive statistic is used in studying the pattern of the construction occupational disease and the nationality of the construction workers accidents. According to Reeves, (1992) descriptive analysis involves describing a specific situation of a particular result. The descriptive analysis is a branch of statistic that allows large quantities of data to be summaries into a form that is understood (Burns, 2000). Hammond *et al.*, (2000) describe descriptive statistic as a form of summarizing row scores, e.g. average, percentage, variance, etc. The results of the descriptive

statistic were presented according to the construction occupational disease and the nationality of the construction workers accidents and presented in percentage of its total.

3.0 RESULT AND DISCUSSION

3.0.1. Types of construction occupational diseases

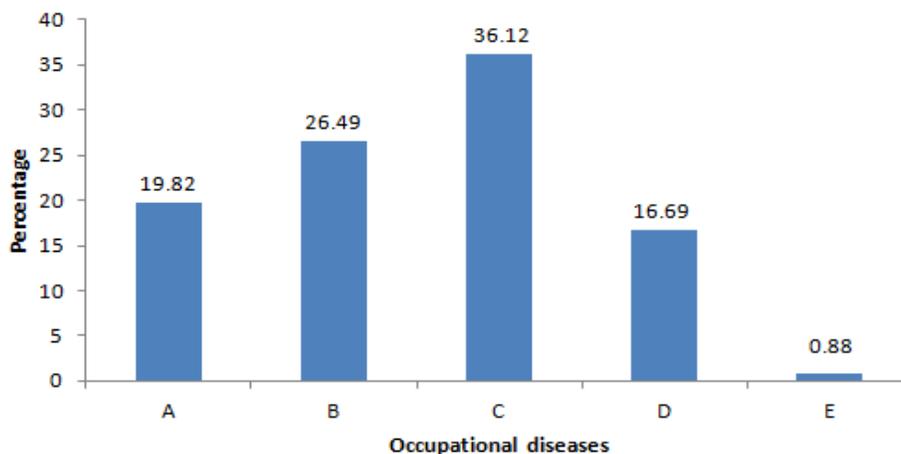
Table 3.1 below shows the occupational diseases in the 20 construction sites from 2000 – 2011 investigated by the Department of Occupational Safety and Health (DOSH) Malaysia.

Table 3.1 Occupational Diseases in 20 Construction Sites from 2000 – 2011 Investigated by DOSH

Types	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	Total
Occupational Lung Diseases	14	17	11	6	13	20	18	25	30	25	30	38	247
Occupational Skin Diseases	25	28	20	18	23	21	20	43	35	31	29	37	330
Noise Induced Hearing Loss	33	24	19	15	35	42	38	36	44	50	53	61	450
Musculoskeletal Disorder	16	11	4	9	5	6	14	12	22	29	38	42	208
Psychosocial Disorder	0	0	1	0	2	1	2	1	1	1	1	1	11
	TOTAL												1,246

Source: Researcher Analysis

Figure 3.1 shows the percentage occurrence of different types of occupational diseases over the period of the study investigated by DOSH Malaysia and reported back to the construction.



Legend

- A. Occupational lung diseases.
- B. Occupational skin diseases
- C. Noise induced hearing loss
- D. Musculoskeletal disorder
- E. Psychosocial disorder.

Figure 3.1 Percentage of occupational diseases investigated by DOSH

Work related diseases are an increasing problem that countries are just becoming aware, recent studies show that the number of work related diseases seems to be underestimated (Driscoll, *et al.*, 2005a; Nelson *et al.*, 2005). Examples in the case of work related cancers (Driscoll *et al.*, 2005b), musculoskeletal disorders (Punnett *et al.*, 2005), respiratory diseases (Driscoll *et al.*, 2005c), psychosocial problems, and circulatory diseases (Nurminen & Karjalainen, 2001).

Hearing loss is a leading occupational disease concern in industrial country (Neitzelet *al.* 1999; May 2000; Palmer *et al.* 2002) Noise induced hearing loss occurs more in construction sites under study (36.12%), noise can reduce the alertness of a construction workers on site and interference with communication at building site can lead to accidents due to inability to hear the warning shout, etc. The frequency of occupational deafness increases with age i.e. year of exposure to noise (Veigt *et al.*, 1976). A cross sectional study of 125,000 construction workers in Sweden shows that about 7% suffer from serious hearing loss probably induced by noise, particularly high prevalence were found in rock blasters, sheet metal workers, carpenter, tools repair workers, heavy equipment operators and concrete workers (Veigt *et al.*, 1976). In Germany noise-induced hearing loss has been found most frequently in driver of heavy construction equipment and in the crane and bulldozer operators (Eggeling, 1980).

An occupational skin disease is second with 26.49%, skin diseases; especially contact dermatitis is one of the commonest occupational diseases in construction workers. In Germany, 50% of 6000 occupational diseases in building workers reported per year during 1971 – 1976 were skin diseases (Eggeling, 1980). Similar results have been found in other countries (Haublein and Heuchert, 1979; Vaaranen and Vasama, 1980). Painters too suffer a high frequency of contact dermatitis, probably due to the irritant and the allergenic effect of many solvent and epoxy products (Hogberg and Wahlberg, 1980).

Figure 4.9 shows the result of musculoskeletal disorder which account for 16.69%. Musculoskeletal is associated with hard physical labor in construction work, promotes the development of degenerative diseases and low back pain. Several lumbar disc degenerative diseases have been found in 30 – 40% of workers in jobs with exposure to back loads, whereas the prevalence of this disorder in reference groups were usually below 20% (Wickstrom, *et al.*, 1978). In a cross sectional study of concrete reinforcement workers Wickstrom, *et al.*, (1978) found that 3% had restricted lumbar flexion, half as many had pain during forward bending and three out of four men with moderately or severely restricted lumbar flexion had radiological signs of disc degeneration. Prolonged local pressure caused by awkward work position or repeated strain against a particular area may causes nerve paralysis such as pneumatic tools may damage the

median nerves, the carrying of timber steel rods etc on the shoulder may paralyse nerves of several shoulder muscles, sitting in a crouching or kneeling position may cause pressure on the external or internal political and other nerves, the symptoms in the beginning relate to dullness and odd sensation, paralysis may follow (WHO, 1980).

Occupational lung diseases account for 19.82% of occupational diseases during the period of study 2000 – 2011. Dust is a major health hazard in the construction industry, some repairable dust may be fibrogenic and cause scarring of the lungs, free silica and asbestos are of special concern at building sites. In Germany, there are about 400 reported cases of silicosis per year during 1971 – 1976 among construction workers (Spear, 1977). Workers running a special silicosis risk include rock blasting, stone masons, concrete grinding, drilling and chiseling and marble finishing.

Psychosocial disorder accounts for 0.88% in this research work Figure 3.1. Psychosocial factors are often referred to as causing stress. The significance of these factors at construction site remains to be evaluated, but will undoubtedly include pace of work, interest in specific tasks, fitness of individual abilities for job requirements, known or suspect risk of accidents health impairment, and relations with management and co – workers (Grandjean, 1983). The relevance of such factors has been substantiated (levi, 1972). Psychosocial factors may also aggravate pre-existing minor health problem into conditions that impair performance.

3.0.2 Accident according to Nationality

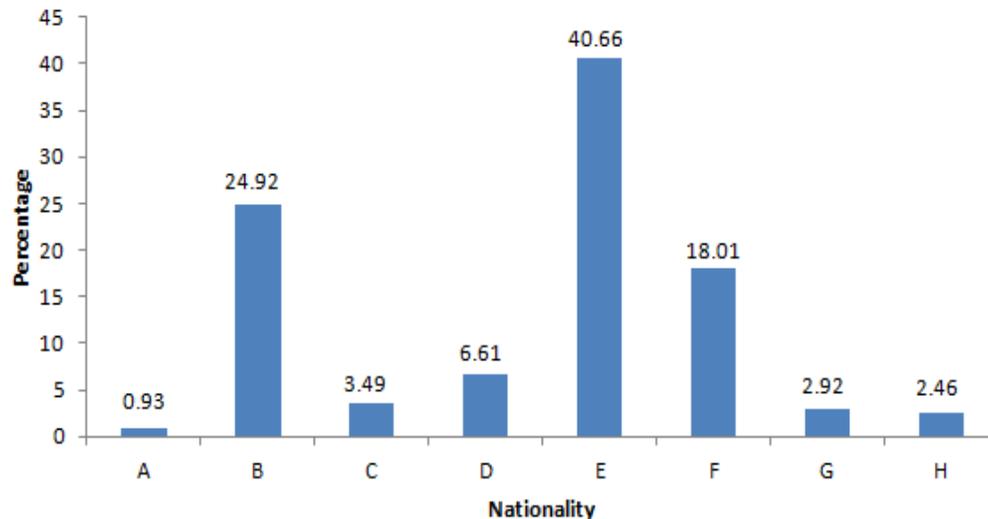
Table 3.2 below show the accidents records according to Nationality in 20 construction sites from 2000 – 2011. It can be observed from the table that most accidents occur among foreign workers.

Table 3.2 Accidents According to Nationality in 20 Construction Sites from 2000 – 2011.

S/No.	Nationality	fatal	NPD	PD	Total
1	Malaysian	6	45	2	53
2	Bangladesh	154	1,065	209	1,428
3	Filipino	32	151	17	200
4	Indian	22	327	30	379
5	Indonesian	278	1,921	131	2,330
6	Pakistan	121	791	120	1,032
7	Napal	25	131	10	167
8	Vietnam	14	122	5	141
	-	653	4,553	524	5,730

Source: Researcher Analysis

As of May 2011 Malaysia has approximately 1.9 million foreign workers spread across various sectors (Abdul Rahim, *et al*, 2011)



Legend.

A. Malaysia
C. Filipina
E. Indonesia
G. Napal

B. Bangladesh
D. India
F. Pakistan
H. Vietnam

Figure 3.2 Distribution of accident cases according to Nationality

However, around 70% - 80% of construction labours are occupied by foreigners. Due to the influx of foreign workers, the employers are reluctant to employ locals since the wages paid to foreign workers are much less as compared to the locals (Ofori, 1996). The result of this research shows that Indonesian has the highest accident percentage rate 40.66%, this fellow by Bangladesh 24.92%, Pakistan 18.01%, Indian, 6.61%, Filipina 3.49%, Napal 2.92%, Vietnam 2.46% and Malaysian 0.93%. The finding of this research is in consistence with previous research done by Narayanan and Lai, (2005) and Murtyet *al*, (2006), in which Indonesian, Bangladesh, and Pakistani etc. respectively have the highest number of accidents in Malaysian construction sites.

Construction work does not attract young Malaysians due to the fact that the work is less permanent in nature and it's been carried out in trying conditions and the employers are not even willing to help the matter as rather than them rising the wages and term of employment they result in to using foreign construction workers most especially from Indonesia even during shortages of employees (Narayanan and Lai, 2005). The foreign workers, most especially the Indonesian were easily available and are less likely to be detected due to their similarities to the

predominant Malay community in Malaysia (Narayanan and Lai, 2005). Also Indonesian is less problematic and has no language and cultural barriers, besides, they were willing to work at a lower wages compared to local workers (Murty *et al*, 2006). From this research work, Malaysian construction workers account for 0.93% of accidents for the period of study. Presently the construction sectors remains unattractive to the young Malaysian due to low level of wages, even for skilled workers (Aboe, 2010). The Executive Director of the Malaysian Federation said that most Malaysian workers are not willing to work on a plantation or construction sites because of hard work under the sun that many of the 26 million Malaysian want white collar jobs (Bloomberg News, 2005). According to Narayanan and Lai, (2005) as cited in Abdulrashid, (1996) that most Malaysian construction workers are found in countries with high wages jurisdiction such as Singapore, Japan and Taiwan part of China and it is estimated as at 1993 that 150,000 Malaysian are working outside Malaysia and most of them illegally in construction sector of those three countries The demand of construction workers both skilled and unskilled in the construction sector is due to the rapid economic growth coupled with the fact that most skilled Malaysians that left during the economic downturn of the mid's 80's refused to return in significant numbers had made the immigrant workers rely upon to fill the short fall in both skilled and unskilled labor (Narayanan and Lai, 2005).

4.0 CONCLUSION AND RECOMMENDATION

It can be conclude from the literature search and the analysis conducted on the accidents according to the nationality that the Malaysia construction industry is a foreign construction workers dominated sector. Work related diseases are an increasing problem that countries are just becoming aware. In Malaysia, noise induced hearing loss is the leading occupational disease 36.12%, follow by occupational skin disease 26.49% etc. However, the rate of occupational disease can be reduced or minimized if more precautions are taken. If the safety standard can be further improved, it will attract more local workers (Malaysian) to work in the sector. The good safety practiced can reduced accidents rate at the construction site and local Malaysian workers will be more interested to work in the construction sector. Effective safety management can lead to safer system of construction and reduce the incidence of injuries and work related diseases. Also effective safety management can reduce the number of injuries to personnel and operatives in the workplace through the prevention and control of workplace hazards.

Establishing a clear, complete, and practicable site safety plan is one of the most effective methods for ascertaining site safety and minimizing potential hazards. The Personal Protective Equipment (PPE) Regulations 1992 require the employer to provide without charge, 'all equipment (including clothing affording protection against the weather) which is intended to be worn or held by a person at work and which protects him against one or more risks to his health or safety. All workers should be covered with insurance so their dependent has little financial security. A good insurance cover and fair dealing bring more confidence and mutual co-existence.

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