UNIVERSITI PUTRA MALAYSIA

PREVALENCE OF WORK RELATED INJURIES AND ITS ASSOCIATED FACTORS AMONG WORKERS OF AN UNDERGARMENT MANUFACTURING INDUSTRY IN TELUK INTAN, PERAK, MALAYSIA

OBI ADAEZE NKEMAKOLAM

FPSK(M) 2017 58

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By

OBI ADAEZE NKEMAKOLAM

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirements for the Degree of Master of Science

July 2017

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DEDICATION

I humbly dedicate this Thesis to God Almighty the maker of heaven and earth for his strength and guidance throughout the period of this work.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the Degree of Master of Science

PREVALENCE OF WORK RELATED INJURIES AND ITS ASSOCIATED FACTORS AMONG WORKERS OF AN UNDERGARMENT MANUFACTURING INDUSTRY IN TELUK INTAN, PERAK, MALAYSIA

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July 2017

Chairman : Ahmad Azuhairi Bin Arrifin, MBBS, M.Comm Med (OH)
Faculty : Medicine and Health Sciences

Industrial accidents are commonplace until today, there are thousands of workers getting injured every day. Workplace accidents and injuries do not happen by chance. Accidents and injuries happen as a result of interplay of many variables in the workplace, such as the worker, equipment, working procedures and many more. The key to prevent the accidents from happening would be to control the accident hazard and risk in the workplace.

A cross-sectional study was carried out over a 3-month period from14th July 2016 to 1st September 2016 among workers in an undergarment manufacturing industry in Teluk intan, Perak to determine the prevalence and factors associated with work related injuries. Two hundred and fifteen workers 215/260 were selected which is 82.7% response rate by a two-stage simple random sampling. Questionnaires were validated using content and face validity. Self-administered, validated and pretested questionnaires in English and Bahasa Malaysia were used to determine the socio-demographic characteristics, occupational factors (work station, work environment), Organizational factors (safety training, administrative control) and behavioral factors (personal protective equipment availability and job task demand).

The prevalence of work related injuries among the respondents was 73.5%. Male significantly reported with higher rate of work related injuries (82.1%) (p = 0.011). Malaysia reported with 64.1% of workplace injuries. Among non-Malaysia the prevalence of work related injuries was highest among Nepalese (91.7%) (p=0.004). Among Malaysian, Indian reported with highest incidence of work related injuries 87.5%, the association was significant association (p=0.028). The prevalence of work related injuries was the highest among divorced, widowed or separated with

84.6%. This was significantly associated with work related injuries (p=0.024). Logistic regression analysis found significant association between work related injuries and working with an electric motor which was one of the major predictors in this study (AOR = 149.5, 95% CI =13.4-1668.1, p<0.001) and feeling tired and dizzy after work also. As well as, primary educational background (AOR = 196.1, 95% CI= 5.56 - 19.70, p= 0.004), noise (AOR = 7.80, 95% CI =2,13 - 28.6, p= 0.002), heat (AOR = 28.2, 95% CI = 2.21 - 358.8, p= 0.010) and adequate safety policies (AOR = 0.20, 95% CI = 0.06 - 0.65, p= 0.008).

In conclusion, this study has identified that the prevalence of work related injuries is high among workers. To curb this high prevalence, guidelines and policies for preventive action should be put in place and training on the proper use of machine targeting workers with low educational background should be provided. The next step is to determine the causes of work related injuries among production workers and provide workers adequate work schedule to enable them have enough rest and avoid fatigue.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk Ijazah Master Sains

KELAZIMAN PERKERJAAN BERKAITAN KECEDERAAN DAN FAKTOR-FAKTOR BERKAITAN DIKALANGAN PEKERJA DI SEBUAH INDUSTRI PEMBUATAN PAKAIAN DALAM DI TELUK INTAN, PERAK.

Oleh

OBI ADAEZE NKEMAKOLAM

Julai 2017

Pengerusi : Ahmad Azuhairi Bin Arrifin, MBBS, M.Comm Med (OH)
Fakulti : Perubatan dan Sains Kesihatan

Kemalangan dalam industri adalah perkara biasa yang berlaku pada hari ini, diman beribu-ribu pekerja mengalami kecederaan setiap hari.Kemalangan di Tempat Kerja dan kecederaan bukan lah berlaku secara kebetulan.Kemalangan dan kecederaan terjadi daripada pelbagai pembolehubah di tempat kerja seperti pekerja, peralatan, prosedur bekerja dan banyak lagi.Kunci untuk mengelakkan kemalanganini dari terjadi adalah dengan mengawal bahaya kemalangan dan risiko di tempat kerja.

Satu keratan kajian telah dijalankan dalam tempoh tiga bulan dari 14 Julai 2016 sehingga 1 September 2016 di sebuah industri pembuatan pakaian dalam di Teluk Intan, Perak iniadalah untuk menentikan prevalen dan faktor-faktor yang berkaitandengan kecederaan berkaitan pekerjaan. Dua ratus lima belas pekerja 215/260 telah terlibat dimana 82.7% merupakan kadar respon dengan persampelan rawak mudak

dua peringkat. Soal selidik yang dilakukan sendiri dalam Bahasa Inggeris dan Bahasa Malaysia telah digunakan untuk menentukan ciri-ciri sosio-demografik, factor pekerjaan (tempat kerja, persekitaran kerja), Faktor-faktor organisasi (latihan keselamatan, kawalan pentadbiran) dan faktor-faktor tingkahlaku (peralatan perlindungan diri yang tersedia dan permintaan tugasan kerja).

Kelaziman kecederaan berkaitan kerja dikalangan responden-responden adalah 73.5%.Lelaki adalah paling ketara dilaporkan dengan kadar yang tinggi untuk kecederaan berkaitan kerja (82.1%) (p=0.011)..Malaysia dilaporkan dengan 64.1%

kecederaan-kecederan di tempat kerja.Diantara bukan warganegara Malaysia kelaziman kecederaan-kecederan berkaitan kerja yang tertinggi ialah warga Nepal iaitu (91.7%) (p=0.004). Dikalangan warganegara Malaysia pula, kaum India dilaporkan mengalami kecederaan-kecederaan berkaitan kerja paling tinggi iaitu 87.5%. Ini menunjukkan terdapat hubungan signifikan (p=0.028).Kelaziman untuk kecederaan-kecederaan berkaitan kerja adalah tertinggi dikalangan mereka yang bercerai, balu yang kematian pasangan atau berpisah dengan pasangan mencatat 84.6% (p=0.024).

Analisis logistic regresi mendapati hubungan signifikan diantara kecederaan-kecederaan berkaitan kerja dan pekerjaan menggunakan motor elektrik adalah merupakan salah satu ramalan terbesar didalam kajian ini (AOR = 149.5, 95% CI =13.4-1668.1, p<0.001) dan juga keadaan penat serta pening selepas bekerja (AOR = 5.08, 95% CI = 2.41- 10.7, p<0.001). Begitu juga dengan tahap pendidikan sekolah rendah (AOR = 196.1, 95% CI= 5.56 - 19.70, p= 0.004), bising (AOR = 7.80, 95% CI =2,13 - 28.6, p= 0.002), dan polisi –polisi keselamatan yang mencukupi (AOR = 0.20, 95% CI = 0.06 - 0.65, p= 0.008).

Kesimpulannya, kajian ini telah dikenalpasti mengenai kelaziman kecederaan-kecederaan berkaitan kerja adalah tinggi dikalangan pekerja.Untuk mengekang kelaziman yang tinggi ini, garis panduan dan dasar untuk tindakan pencegahan perlu dilaksanakan dan latihan mengenai penggunaan yang tepat bagi pekerja yang menyasarkan mesin dengan latar belakang pendidikan yang rendah harus disediakan. Langkah seterusnya adalah untuk menentukan punca kecederaan yang berkaitan dengan pekerjaan di kalanganpekerja pengeluaran dan menyediakan jadual pekerja yang mencukupi untuk membolehkan mereka berehat dan mengelakkan keletihan.

ACKNOWLEDGEMENTS

First and foremost, I give glory to God for the fulfillment and success of my study research, who gave me the strength, will and zeal when I almost felt like giving up. He was the divine source of my strength.

My utmost appreciation goes to my able supervisor, Dr**.** Ahmad Azuhairi Bin Ariffin,who made it possible for me to come up with this thesis through his input and corrections. Thank you so much for your patience throughout my period of study.

I would not fail to acknowledge my co-supervisor: Dr Huda Zainuddin whom amidst her busy schedule still had time to go through my research. Thank you for your continuous encouragements, constructive criticism and making me a priority in your working life, I sincerely do appreciate.

I would also like to express my appreciation to my thesis examination committee: Dr. Suriani binti Ismail, and Dr Suhainizam Muhamad Saliluddin who found time in their tight schedule to read through my thesis and brought out the best in me, i really appreciate.

To my wonderful husband Prince Mike Chibuzor Dike who was always there for me, encouraging me at all times. Thank you for your financial, spiritual and academic support. And to my beloved son Naetochukwu Dike, who was always a good company when I needed some time off. Thanks for being my inspiration.

To my father Prince Ezenwa Kingsley Obi who taught me to believe in myself and work hard, who always encouraged me never to give up, and that so much could be done with little.

To my mother Lolo Stella Ugboaku Obi for her continuous calls and encouragement on a daily basis always had me going, my advisor and my friend. Thank you for shaping and making me the person I am today, and for your fervent prayers.

To my wonderful siblings ASP Eyinna Kingsley Obi, Barr. Onyewuchi Obi, Chiamaka Obi and the baby of the house Chinaza Obi.

To my father inlaw Chief E.E Dike, I say thank you for your prayers, care and concern. I sincerely do appreciate.

To my best friends at home for all the love, and my coursemates in UPM for all the help and encouragement I got from them.

To all the people I met before and in the course of my research especially Nurul Shafina binti Mohamed Sharif who helped me with my data collection and much more, to Vaidehi Ulaganathan for your relentless support in the course of this research, I say thank you and appreciate all the help.

Finally, I wish to extend my heartfelt gratitude to all the strangers who were helpful and nice to me in one way or another. One thing is for sure, what goes around, comes around, Good or bad. So for this I really do appreciate and pray that strangers will be nice to you too.

I certify that a Thesis Examination Committee has met on 19 July 2017 to conduct the final examination of Obi Adaeze Nkemakolam on her thesis entitled "Prevalence of Work Related Injuries and its Associated Factors among Workers of an Undergarment Manufacturing Industry in Teluk Intan, Perak, Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

Members of the Thesis Examination Committee were as follows:

Suriani binti Ismail, PhD
Senior Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Chairman)

Suhainizam Muhamad Saliluddin, PhD
Senior Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Internal Examiner)

Rozita binti Hod, PhD
Associate Professor
Universiti Kebangsaan Malaysia
Malaysia
(External Examiner)

NOR AINI AB. SHUKOR, PhD
Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 4 September 2017

This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Ahmad Azuhairi Bin Arrifin, MBBS, M.Comm Med (OH)
Medical Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Chairman)

Huda Binti Zainuddin, MD, M.Comm Med (OH)
Medical Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Member)

ROBIAH BINTI YUNUS, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

Declaration by graduate student

I hereby confirm that:

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Name and Matric No: Obi Adaeze Nkemakolam , GS 39610

Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

Signature: _____
Name of Chairman of Supervisory Committee: Dr. Ahmad Azuhairi Bin Arrifin, MBBS, M.Comm Med (OH)

Signature: _____
Name of Member of Supervisory Committee: Dr. Huda Binti Zainuddin, MD, M.Comm Med (OH)

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LIST OF ABBREVIATIONS

%	Percentage
WRI	Work Related Injuries
BLS	Bureau of Labor Statistics
LABORSTA	Labor Statistics
HSE	Health and Safety Executive
SOCSO	Social Security Organization
GCC	Golf Cooperation Council
SME	Small and Medium Enterprise
SMEs	Small Medium Size Enterprises
OHS	Occupational Health and Safety
GDP	Gross Domestic Profit
NIOSH	National Institute of Occupational Safety and Health
DOSH	Department of Occupational Safety and Health
OSHA	Occupational Safety and Health Act
NSC	National Safety Control
ILO	International Labor Organization
WHO	World Health Organization
PDCA	Plan-Do-Check-Act
MOM	Ministry of Manpower

CHAPTER 1

INTRODUCTION

1.1 Background

Work related injury is any individual injury, illness or death as a result of an occupational accident sustained by a worker in connection with the duties assigned to the specific job position. It could be any kind of injury, and can vary from a minor injury to a more severe injury (Taswell & Wingfield, 2008).Every job done by an individual has some level of hazards. Workers in various industries are prone to some degree of risk or health hazards consequent upon the nature of their job. It is estimated globally that two million people die every year as a result of work-related injuries, accidents and diseases (Kanten, 2012) and it is also estimated globally that every year approximately 100 million occupational injuries occur (Chau et al., 2008). The health and safety of workers should be ensured in different professions hence, the establishment of the health and safety department saddled with the charge of avoiding injuries in any form (National Safety Council, 1989a and 1989b).

The chronicles of industrial history are often littered with different industrial accidents that frequently resulted in loss of thousands of lives and left a lot more permanently injured. The Chernobyl nuclear power plant explosion is a well-known example that led to the death of a large number of people, and thousands more agonizing from radiation related illnesses. Work related accidents are common until recently; with thousands of workers getting injured daily. Occupational injuries and accidents do not just happen without cause. It occurs due to the various interplays of variable in the workplace, like the workers, machines used, working procedure and much more every day (Mohamed, 2012). Hazards are various factors that dwell within the work environment which could be harmful to health. All of these factors could aid the occurrence of accidents in the workplace. The key to preventing this accidents and injuries from occurring will be to bring the accident hazard and risk in the work place under control.

Study conducted in Taiwan on occupational fatalities accounted for 0.25 deaths per thousand in 2005 (Cheng, Lin & Leu, 2010). While in Singapore, study showed national workplace fatality rate for 4.9 per 100,000 workers in 2004 (Siang & Tan, 2010).The rate of injuries and illnesses was studied in Korea among work places and found that the fatality rate (per 10,000) was 1.8 in 2008. In the United States, 4,547 workers died as a result of work related injuries in 2010 (Bureau of Labor Statistics, 2010). Which is almost 12 workers dying daily due to work related injuries. The intensity of this problem does not end in a developed country like the United States, but it is also prevalent in Malaysia too (Kim, 2010).

In 2009, (Hamalainen *et al)* published fatality rates from different countries based on WHO regions and the ILO published statistics (Laborsta).The level of reported fatality rates in USA per 100,000 workers in 1998, 2001 and 2003 was 5.2, 4.9 and 5 respectively. The USA bureau of Labor statistics reported 4.2 and 3.4 fatal occupational injuries per 100,000 workers in 2006 and 2012 respectively (BLS, 2013). Similarly, Laborsta in 2001 (4.9 per 100,000 workers) and the USA. Labor Statistics in 2011 (3.5 per 100,000 workers) demonstrated a nearly 30 percent decrease in the incidence of fatal occupational injuries over ten years duration (LABORSTA, 2014). Therefore, these data indicate a downward trend in incidence of fatal occupational injuries over time.

Laborsta showed a fatality rate of 0.8 per 100,000 workers in UK in 2003(Hamalainen *et al,2009)*, whereas, the Health and Safety Executive revealed a rate of 0.5 per 100,000 workers per year across the period from 2012 to 2013 (HSE, 2013). This difference in ten year duration shows 40 percent decrease in the incidence of fatal occupational injuries in UK.

The statistical authority for the European Union (Eurostat) reported an average fatal occupational injury rate of 1.57 per 100,000 workers across more than 15 European countries in 2010 (HSE,2013). Eight countries, namely Slovakia, Netherlands, Great Britain, Germany, Denmark, Ireland, Finland and Sweden reported fatality rates below this average. The highest fatality rate was reported in Cyprus followed by Romania, Luxembourg, Lithuania and Portugal; all with fatality rate higher than 3 per 100,000 workers in 2010. In Cyprus, the Laborsta estimations in 1998 and 2001 were 15.5 and 12.9 which dropped to 3 per 100,000 workers in 2003. Similarly, countries such as Romania, Luxembourg, Lithuania and Portugal showed a higher fatality rate in 2003 when compared to 2010 data (LABORSTA, 2014).

An independent taskforce on workplace health and safety in New Zealand (NZ) compared the fatal occupational injury rates in nine countries over the period 2005-2008 and reported the highest fatal occupational injury rate in NZ, with more than 4 fatalities per 100,000 person years (Lilley et al, 2013). This high rate in NZ was followed by Spain and France where more than 3 fatalities per 100,000 person years reported. Canada and Australia had more than 2 fatalities per 100,000 person years, whereas Norway along with Finland, Sweden and UK, as shown by Eurostat data, reported best rates below 2 fatalities per 100,000 person years. Laborsta showed high rates of fatalities in African countries like Algeria, Togo and Tunisia with 17.6, 16.3 and 13.1 fatalities per 100,000 workers respectively, in 2004 (laborsta, 2014).However, the fatality rates in Egypt and Zimbabwe were lower compared to other African countries (Machida, 2009). Egypt reported 7 deaths per 100,000 workers in 2003 while in Zimbabwe it was 6.3 deaths per 100,000 workers in 2007 (LABORSTA, 2014).

In Asian countries; Bhutan (31.9), Nepal (28.8), Myanmar (26.2), Bangladesh (21.8) and Afghanistan (21.7) reported high occupational fatality rates in 2003. India ranks

the second largest workforce in the world (473,200,000 economically active populations in 2003) showed comparatively less occupational fatality rate of 9.9 per 100,000 workers. Meanwhile, China being the most populous country (737,060,000 economically active populations in 2003) reported fatality rate of 13.2 per 100,000 workers. Data from the Middle East countries including the Gulf Cooperation Council (GCC) countries also show variation in the occupational fatality rates. In 2003, among the GCC countries; UAE (9.8) Qatar (9.2) and Bahrain (8.3) had similarly high fatality rates, while Saudi Arabia (7.9), Oman (7.1) and Kuwait (5.9) showed fatality rate lower than the average of the region (8 per 100,000 workers) (Hamalainen *et al,2009).* A recent data from Qatar showed that the overall case fatality was 3.7% among workers who were presented to the trauma unit between 2010 and 2012 (Al-Thani, 2014).

In Malaysia, the Social Security Organization (SOCSO) reported that in 2007 only, as much as 56,339 industrial accident cases were reported. The frequency rate of occurrence of occupational accidents has steadily been dropping from 11.0 accidents per 1,000 workers in 2000 to 6.1 accidents per 1,000 workers in 2007. While the frequency of occurrence of occupational fatalities appears to have risen from 9.5 deaths until September 2011, SOCSO has paid about RM 34 million to 11,871 accident case, which is a huge financial cost.

As a result of these social and economic costs resulting from workplace accidents, it is important that researchers know the events preceding work-related injuries, as well as the organizational factors that may affect an individual's safety behavior at work (Mullen, 2004).Safety in the work place is of immense importance to minimize or eradicate workplace injuries and accidents.

In any job, there are integral hazards and risks that one has to take, either big or small. Management and control of these risks are very important in the elimination of workplace accidents, and this is where a lot of workplaces are falling short. In accordance with the most current figures released by the National SME Development Council (2012), small and medium size enterprises (SMEs) that have below 150 workers comprised 99.2% of all firms till the 1stquarter of 2011and made up for an average of about 59% of jobs in the entire sectors and putting in 32% to total GDP (SME Annual Report, 2012). But, even with this economic significance and the amount of workers that rely on them, they have gotten trivial attention from the occupational health and safety (OHS) analysts in Malaysia. It is hard to express or categorize OHS problems in the small firms. For instance, Neither the National Institute of Occupational Safetyand Health (NIOSH) nor the Department of Occupational Safety and Health (DOSH)), both organizations in charge and accountable for occupational safety in Malaysia provide risk indicators by the size of firms, and lots of people assume that larger firms often declare injuries as compared to smaller firms. Furthermore, accidents could be relatively scarce in such firms as a result of their small workforce, and this may be a factor in the negligence attributed to the subject. According to Surienty(2012), it was reported that the rate of accidents reported at the work place mostly in SMEs was disturbing and figures

revealed that in Malaysia the SMEs had the workplace accident rate of 30% - 50% greater than

the big companies. In particular, they are the main contributors to 80% of the overall accidents in Malaysia. Findings that the audits carried out by the DOSH for 2,600 SMEs in 2002 revealed poor compliance (Yahaya, 2002). Therefore, though SMEs are vital to the country, their needed contribution to workplace accident records is equally tangible. The findings from the survey revealed that foreign companies exhibited excelling performance than their local counterparts and those recruiting more than forty workers showed better performance than those recruiting below forty. It is crucial to note that the survey carried out by DOSH (1995) strives to gather some baseline information of hazard safety status in the onset of the inauguration of OSHA 1994.

The management of risk in the manufacturing industry can be a difficult undertaking for employers. Findings have revealed that thousands of lives have been claimed by industrial accidents globally. In this study, the identification of factors that are associated with work related injuries and its prevalence, is aimed at improving work environment and application of safety principles in the undergarment industry.

1.2 Problem Statement

Work is fundamental for life, development and personal fulfillment. Sadly, work activities generate substances to a lesser or greater magnitude, creates injuries and diseases to the worker's health and those in neighboring communities, as well as the environment generally. These hazards termed occupational health hazards occur globally and are not peculiar to a firm, an industry etc or region and most times lead to work related injuries (NSC, 1926; Swuste and Eijkemans, 2006).

According to Department of Statistics Malaysia (2015), there is an increase in the number of employment in manufacturing industry in Malaysia from year to year and Perak recorded a good number of employments in 2014.There has been significant increase in employment from only 9.4% in 1970 to 27.8% in 2010 (Saad et al, 2012). Higher number of employment can increase the productivity. In order to ensure the productivity continuously increase safety, health and welfare of the employees are very important and need to be taken into great consideration. In Malaysia, A survey made in 2011 reviewed that workplace accidents are on the rise with 59,897 cases reported to Social Security Organization (Socso) in 2011, 3.77% higher than the 57,639 cases in 2010. Of the 59,897 cases, 58% were industrial accidents while the rest where commuting indicating that majority of both workers and management were ignorant of some basic principles of health as well as specific hazards associated with their work environment (Subramaniam, 2012). Since industrialization is necessary for the Malaysian economy growth to achieve its set goal of vision 2020, there is a great need of the manufacturing sector in the growth of the nation, and this study is particularly important since it would contribute to

greater understanding of factors that determine work related injuries among workers in the sector. Hazard identification in any occupational activity requires characterization of the work place in recognizing hazardous agents and group of workers likely exposed to the hazards. These hazards could be chemical, biological, physical, etc. (Boley, et al, 1995).

In Malaysia, safety, health and welfare of employees were covered under Occupational Safety and Health Act (OSHA) 1994. Section 15 (1) of OSHA'94 clearly define that the management of safety and health at workplace is the responsibility of those who generate the risk and those who work with the risk, under this act it is the duty of the employer to maintain an accident free workplace. Therefore, the employers are responsible to ensure their employees and workplaces are free from recognized hazards that lead or are likely to lead to death or serious physical harm to its employees. The setting of the management of OHS systems in Malaysia reveals that ever since 1999, OHSAS 18001 has been the sole OHS management system being carried out with 268 companies approved to this system (SIRIM,2009). Nearly all transnational companies functioning in Malaysia have their individual OHS management scheme. Considering there is no national standard for OHS management systems in Malaysia, the authorities created the Occupational Safety and Health Management Systems – Malaysian Standard, in regards to the 2003 ILO standards. In Malaysia, as at 2004, the proportion of fatal accidents per 100,000 workers was 12.9 (SOCSO, 2005). To be of standard with developed countries, that is, lower than five accidents' per 1000 workers, more attempts has to be created by appropriate regulatory bodies and agencies, non-governmental organizations, employers, as well as employees to make sure they comply to laws and regulations. If employees and employers know their responsibilities and roles in making sure hazards at work places are identified, assessed and also controlled, this will certainly promote the prevention of unexpected incidents that cause injury, death, illness and damage to property at the work place. In 2003, Reports of occupational diseases obtained by the Department of Occupational Safety and Health (DOSH) were 181 incidents. The estimate of diseases related to chemicals was 108 cases (i.e. Occupational Skin Disease, Occupational Lung Disease, Occupational Cancer, Chemical Poisoning and Pesticide) which was approximately 60% of the reported incidents. Coming second was Occupational skin diseases among the 60 % after physical diseases (DOSH, 2003b). These alarming numbers of occupational hazards urges the need to look at this problem and hope that this study would be able to clarify several questions regarding this issue. In spite of the contributions made to enhance occupational health and safety systems in Malaysia, the rate of occupational diseases and accidents are still rising as shown by the statistics gotten from SOCSO as pointed out earlier. This vividly shows that there are quite a lot of organizations still adopting a makeshift approach to health and safety at the workplace.

Occurrence of work related injuries affect workers in workplaces. This could be the case of undergarment manufacturing industries, where industrial activities are carried out. There is need to investigate the possible cause of work related injuries inherent in Classita (M) Sdn Bhd and their effects and efficiency of workers in the industry when they occur. This study seeks out to investigate hazard safety condition

in the manufacturing environment or setting. After which, it also aims to investigate if factors like employee's training, involvement, maintenance of equipments at the workplace, provision and use of personal protective equipment (PPE) program, accessible operational control measures e.t.c at the workplace will influence, predict, or contribute to the work related injuries of the manufacturing industries in Malaysia.

Thus this research is important in order to investigate the level of implementation of safety in the manufacturing setting, precisely in the undergarment textile industry after about twelve years since OSHA 1994 was introduced and to discover the factors associated with work related injuries in the particular industry.

1.3 Study Justification

This study is conducted in order to examine safety level in the undergarment industry. Thus, it will highlight several important parameters which contribute to hazards. This may include the types of hazards, risk categories, working site, and also current control measures. According to ILO statistics, every year there are more than 337 million work-related accidents. Worldwide, this causes a loss of 4 per cent of global GDP. But this is not only a problem for developing countries. Well-developed national economies also suffer significant economic losses. And in some countries the losses can add up to 10 per cent of national GDP, or even more. These are losses we can no longer afford in times of rapid political change, economic and financial crises and emerging new risks in our workplaces.

But how can we improve this situation? Prevention is the key. Effective prevention driven by all stakeholders reduces occupational accidents and diseases, improves product quality and the economic performance of enterprises and national economies. Effective prevention makes companies more successful and saves lives. This is why, all over the world, prevention is becoming more of a focus for governments, political decision makers, economic leaders and managers, social partners and all stakeholders of society. Little wonder, Hubbard (2009) said, "risk management is the identification, assessment, and prioritization of risks and the coordination and economical application of resources to monitor, control and minimize the impact and/or probability of unfortunate occurrence".

Besides, little attention has been given to the research aspects of safety especially in the undergarment industries. In Malaysia, research on identifying work related injuries at manufacturing industries is still lacking in regular basis, thereby limiting literature on it. After independence about fifty years ago, the economy in Malaysia has been rising gradually and the manufacturing sector has immensely contributed to this economic development. Sadly, though, the economic rise in Malaysia was tainted by a huge level of work related accidents in the manufacturing sector. Though the situations have improved steadily, the statistics of occupational accidents in the sector is still disturbing and more could be done to curb the situation. This study also

can provide intervention to curb the risk of work-related injuries in order to enhance the efficiency of the workers resulting in reduced reject quantity, improved production and hence increased profits. The study is also important to promote awareness and provide knowledge, serving as a guideline for the administration of the factory in terms to provide a solution and efficient control measure such as administrative, PPE and engineering control for reducing hazards in the workplace.

Thus, this is one of the initiatives made as a contribution in the Malaysian undergarment industries and will narrow the gap between work related injuries study in the undergarment manufacturing factory and other industries.

1.4 Objectives

1.4.1 General Objective

The general objective of this study is to determine the prevalence of work related injuries and its associated factors among workers of an undergarment manufacturing industry in Teluk intan, Perak.

1.4.2 Specific Objectives

The specific objectives are:

i. To determine the socio-demographic characteristics, organizational, occupational and behavioural factors of workers of an undergarment manufacturing industry.
ii. To determine the prevalence of work related injuries among workers of an undergarment manufacturing industry.
iii. To determine the association between socio-demographic factors, occupational factors, organizational factors, behavioral factors and work related injuries among workers of an undergarment manufacturing industry.
iv. To determine the predictors of work related injuries among workers of an undergarment manufacturing industry.

1.5 Research Hypotheses

I. There is a significant association between socio demographic factors and work related injuries among workers.
II. There is a significant association between occupational factors and work related injuries among workers.
III. There is a significant association between organizational factors and work related injuries among workers.
IV. There is a significant association between behavioural factors and work related injuries among workers.

1.6 Purpose of the Study

The general purpose of the study is to explore the relation between occupational, organizational and behavioral factors and work related injuries (WRI) among workers of an undergarment manufacturing industry in Teluk intan, Perak.

1.7 Scope of the Study

The focus of this study is to identify the factors that are associated with work related injuries and to know the prevalence of work related injuries among manufacturing workers. The strength of this work covers the effect that comes up as a result of poor application of safety principles in an undergarment industry that leads to work related injuries. It also embarks on the importance of application of safety principles.

1.8 Significance of the Study

The focus of this study is to know the prevalence of work related injuries among undergarment factory workers, identify the factors that are associated with work related injuries and contribute to the data on the associated risk factors of work related injuries. Its knowledge contribution might assist in the modification of these factors in order to reduce work related injuries. The findings of this study would be beneficial for stakeholders related to improving occupational safety among undergarment workers, and reduce the burden of work related injuries.

1.9 Research Question

i. What are the socio-demographic, occupational, organizational and behavioural factors among workers of an undergarment manufacturing industry in Teluk intan, Perak?
ii. What is the prevalence of work related injuries among workers of an undergarment manufacturing industry in Teluk intan, Perak?
iii. What are the predictors of work related injuries among workers of an undergarment manufacturing industry in Teluk intan, Perak?

1.10 Conceptual Definitions

1.10.1 Hazard

Hazard is a source or a situation with a potential for harm in terms of human injury or ill health, damage to property, damage to the environment or a combination of these (DOSH, 2008).

1.10.2 Risk

Risk is a combination of the likelihood of an occurrence of a hazardous event with specified Period or in specified circumstance and the severity of injury or damage to the health of people, property, environment or any combination of these caused by the event (DOSH, 2008).

1.10.3 Control

A hierarchy of control means the established priority order for the types of measures to be used to control risks. It is comprised of elimination, substitution, ventilation, engineering control and personal protective equipment (PPE). Elimination is the best method to control risk at workplace in term of efficiency and sustainability, but the least preferred method while personal protective equipment is the least effective measure but the preferred approach(DOSH, 2008).

1.10.4 Work related injuries

Work-related injury events referred to acute traumatic injuries at work that required medical attention or treatment or interfered with work activities. A workplace injury is an injury or illness that occurs in relation to an employee's job. Work-related injury means deterioration of the worker's health caused by short and sudden external influence during the time of their working duties or in direct connection with it (Lombardi, 2017).

1.10.5 Workers

Workers in this study refers to the industry workers

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