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Occupational Hazards and Work Environment Management among Osh Certified and Uncertified Automotive Parts Manufacturing Industry Workers

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Abstract: Manufacturing industry poses a great level of occupational hazard and risk, therefore the prevention and control of occupational risk and hazards in this industry is very important. Malaysia as an emerging economy experiences an escalation in the rise of manufacturing outfits and has many employees in this industry. The prevention and control of occupational hazards and risk requires the implementation of a safety and health management system that enables organizations to carry out safety practices in a way that is structured, coordinated and integrated into their whole set of activities and decisions. Risk management in an integrated way, using organization's operations has become highly important in recent years, since it not only cuts rates of hazards but can also improve the firm's productivity, economic and financial results. This study was aimed at comparing the occupational hazard management of workers in OSH certified and uncertified automotive industry. Data was collected among 400 workers in both OSH certified and uncertified automotive industries located in Klang Valley, Malaysia by using a questionnaire survey, which was adopted from MSOSH and was integrated with the Nordic Questionnaire for MSD. Result: The data generated was statistically analyzed using SPSS version 21.0 and the finding from occupational hazard and work environment management revealed that workers in OSH certified company had a significant higher score of 55.77 ± 8.72 compared to workers working in uncertified automotive company who scored 50.26 ± 9.26 for hazards and for environment the score was 54.54 ± 7.43 for certified, which was significantly higher ($p < 0.05$) compared to the workers working in the uncertified company (51.35 ± 4.52). Conclusion: This study showed that OSH certified company workers scored significantly higher in occupational hazard and work environment management than the uncertified company workers.

Key words: Occupational Safety and Health Management System · Occupational Hazards

INTRODUCTION

Malaysia is an emerging industrial country with a rapid rise in Occupational Diseases (OD) which has proved to be a major problem among workers. A report from the Occupational health division (OHD) has shown a 100% rise in the number of cases, that is from 791 in 2009 to 1426 cases in 2010 [1]. This rise may be due to the initiatives by Occupational Health Division's dialogue sessions to increase awareness on occupational diseases (OD) reporting especially in the health sector [1]. There were about 204 cases of Occupational Diseases reported in 2001 (0.09 cases in every 10,000 workers). However, this

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numbers have increased drastically to 1221 cases of Occupational Diseases in 2010 (2.26 cases in every 10,000 workers).Angelina Ariel [3] reported in a National Broadcasting Company blog article that the Malaysian Social Security Organization (SOCSO) in 2011 paid RM1.8 billion in compensation and benefits to its members and contributors. Human Resources Ministry was quoted in the article saying that the total of medical and treatments compensation that involved diseases and accidents had shown an increase yearly with figures RM1.3 billion in 2009 to RM1.6 billion in 2010.

In 2007, there were 1,800,553 workers in the manufacturing industry with 24,146 in the auto manufacturing industry [3]. Musculoskeletal disorders (MSDs) continue to be a major problem in the industry with back and shoulder disorders being among the most common and costly disorders [4]. Automotive manufacturing is one of several industries that have a high incidence of musculoskeletal disorders (MSDs). One important risk factor for MSD include force level or load on the joint, postural stresses and forceful exertions as well as other related exposures [5,6]. Work related injuries and occupational diseases have become an increasing concern to employees, employers and governments because of the impact on workers' health and productivity. Small and Medium Enterprises (SMEs) where the automotive industries fall into continues to be a vital component of the growing Malaysian economy.

Work-related musculoskeletal disorders (WMSDs) represents approximately, one third of workers' compensation costs in Malaysian private industry as reported byAzman [7]. Ergonomics risks at the workplace and bad work organization are parts of the contributing risk factors to occupational safety and health problems in the form of (WRMSDs) A number of conditions in the workplace are responsible for the increase in work related musculoskeletal disorders (WMSDs) suffered by the workers [8]. Thus these results are potentially useful for the industry, particularly, manufacturing industry, in increasing productivity, promoting safety practices and reducing WMSDs amongst Malaysian industrial workers at workplaces. Occupational Safety and Health Management System (OHSMS) certification is a kind of soft regulation that requires a company to fulfill some legal obligations in addition to engaging in organizational processes to promoting continuous improvement of Health and Safety conditions [9], the certification of OHSMS enables firms to document a certain pattern of conditions of work to show to both the larger public and its own customers that they are up to date in establishing standards for production. Safety management systems are integrated mechanisms in organizations designed to control the risks that can affect workers' health and safety and at the same time ensures the company can easily comply with the relevant legislation. A good safety management system should be fully integrated into a company and should be a cohesive system consisting of policies, strategies and procedures that provide internal consistency and harmonization [10].

MATERIALS AND METHODS

The questionnaire used for this study was adopted from (MSOSH). The questionnaire was integrated with the Nordic Questionnaire for MSD [11].A total of 464 questionnaires were distributed to certified and uncertified automotive parts manufacturing factory workers from two different regions, where data was collected from June 2013 until January 2014. However, only 400 questionnaires were completed and returned, giving a response rate of 80% of the respondents. The non-responses were those who are not interested in joining this study, did not complete the questionnaires and workers who did not return the answer sheet to the researcher, one is an occupational safety and health management system (OSHMS) certified automotive parts manufacturing factory located in Shah Alam while the other automotive parts manufacturer, an OSHMS uncertified company is ISO 9001 / QS 9000 certified and is located in Sungai Buloh, both companies are in Klang Valley Malaysia. Table 1 demonstrates the socio-demographic and background information of the respondents.

Data Analysis: All the data was computed and analyzed using IBM SPSS Statistics 21 software (SPSS Inc., Chicago, Illinois, USA). The univariate analysis used frequency in term of percentage, median, arithmetic mean, standard deviation to determine the socio demography such as gender, nationality, ethnics, marital status, educational level and work section profile. Chi square test and Independent sample T test was used to determine and compare occupational hazard management, among workers working in OSH certified and uncertified companies.

Table 1: Socio-Demographic And Background Information Of The Respondents (N=400)

Socio-demography		Certified Mean ± SD (Yrs) N=200%	Uncertified Mean ± SD (Yrs) N=200%
Age		31.66 ± 6.007	34.35± 8.087
Gender	Male	87%	57%
	Female	13%	43%
Nationality	Citizen	100%	50%
	Non-Citizen	0	50%
Ethnicity	Malay	95%	33%
	Chinese	0	9%
	India	5%	8%
	Others	0	50%
Educational Level	Illiterate	0	29.5%
	Primary	5%	24.5%
	Secondary	66.5%	28%
	College	16%	17.5%
	University	12.5%	0.05%
Marital Status	Single	38%	28.5%
	Married	62%	63.5%
	Divorced	0	7%
	Widow	0	1%
Respondent's work station		20% (Parts Distribution)	19% (Metal)
		19% (Welding)	16% (Mixing)
		16% (Stamping)	20% (Molding)
		15% (Set up)	15% (Trimming)
		11% (Packing)	11% (Polyurethane)
		10% (Refinery)	9% (Squeezing)
		9% (Accessory)	10% (Press blow)

RESULTS AND DISCUSSION

It observed from the study that the total occupational hazard management score of both OSH certified and uncertified workers studied was 53.02 ± 6.78. The workers from OSH certified company scored (55.77 ± 8.72) which is significantly higher($p< 0.05$), compared to workers in uncertified automotive company who scored (50.26 ± 9.26) Table 2. Also the environmental management shows that the workers in the OSH certified company scored 54.54 ± 7.43, which was significantly higher ($p < 0.05$) compared to the workers in the uncertified company (51.35 ± 4.52) Table 3.

As was observed in this study the occupational hazard management andenvironmental management scores was higher in certified compared to the uncertified. This is because physical, psychological, chemical andbiological hazards and risks that are present and might arise from the organization's activities are properly assessed, controlled and documented in the certified company. However in the uncertified company was not the same, there was no proper documentation and measures of management of future and present risks. The certified company makes more effort to see that actions are taken to ensure operation, handling, storage and transport of plant and substances in a safe manner. They implemented the use of hazard report form, hazard identification checklist and risk assessment tools, hazardous substance register and material safety data sheets for all chemicals. Other safety cultures practiced by the certified company is having the accident report form, which make available the records of work related injuries, diseases and incidents and workers exposures limits, interaction with workers on safety and investigation carried on origin and underlying causes of work-related injuries, ill health, diseases and incidents are documented. Health committee is set up and they make recommendations on areas of improvement. The health cultures are not practiced in the uncertified company as in the certified company. This less culture of hazards and risk management practices in the uncertified company may have caused an increase in the work related injuries and hazards. Although we could not ascertain the number because the company's documents was kept confidential and not made available to the public.

Table 2: Occupational Hazard Management Among Workers In OSH Certified And Uncertified Industry.

Parameters	Score	*p*-value	*t*-statistic (df)
Occupational hazard management			
OSH certified company	55.77 ± 8.72		
OSH uncertified company	50.26 ± 9.26		
Total	53.02 ± 6.78	0.00*	-5.51

Table 3: Environmental Management Among Workers In OSH Certified And Uncertified Industry

Parameters	Score	*p*-value	*t*-statistic (df)
Environmental management			
OSH certified company	54.54±7.43		
OSH uncertified company	51.35±4.52		
Total	52.95 ± 6.35	0.00*	-3.187

*$p<$ 0.05from independent samples t-test indicating that the occupational hazard management, OSHMS and environmental management among workers working in OSH certified and uncertified companies are significantly different.

The result is in consonance with findings from other researchers who revealed that implementation of OHSMS leads toa decrease in illness and injury frequency, decrease in lost-time case rate, decreases in disability-related costs like workers' compensation costs, short- and long-term disability costs [12,13].

The main benefits identified from OHSMS certification have been the improvement of working conditions, the decrease in the number of accidents and their associated costs, which helped to improve the company's image in the surrounding area and among customers, as well as the increase in profitability.

CONCLUSION

In conclusion, the result of this study revealed that OSH certified company workers scored significantly higher in occupational hazard management. To promote safety and health in the workplace it is important to ensure exposures to health hazards are regulated and well controlled. This is necessary as workplaces in the country are subjected to the phenomenon of globalization with introduction of new technologies, work organizations, work processes and substances.

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