

ORIGINAL ARTICLE

The Effectiveness of the Occupational Safety and Health Master Plan 2015 (OSH-MP 15) in Enhancing Government Leadership and Preventive Workplace

Norhafizah Yaacob¹, Shamsul B.M. Tamrin^{1*}, Ng Yee Guan¹, Vivien How¹, Rozanah A. Rahman², Haroun Zerguine¹, Dayana M. S. N. Hazwani¹

¹ Department of Environmental and Occupational Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia

² Faculty of Economics and Management, University Putra Malaysia, Selangor, Malaysia

ABSTRACT

Background: Occupational Safety and Health Master Plan for Malaysia 2015 was intended to increase awareness, knowledge and commitment to Occupational Safety and Health in all undertaking to reduce the number of injuries, diseases and fatalities. **Objectives:** The purpose of this study is to determine the effectiveness of Occupational Safety Health Master Plan for Malaysia 2015 (OSH-MP 15) in enhancing government leadership and preventive workplace culture. **Methods:** This cross sectional study covered all the states in Malaysia, constituting of 309 employers, 350 Occupational Safety Health practitioners and 360 employees as respondents. There were three questionnaires for three different groups which were employers, Occupational Safety Health practitioners and general employees. The respondents were selected through random sampling. **Results:** For strategy 1, there was a significant difference in mean of effectiveness of OSH-MP15 between sectors for general workers [F (11, 348) =12.06, p<0.001], OSH practitioners [F (11, 338) =1.19, p=0.033] and employers [F (11, 297) =5.62, p<0.001]. For strategy 2, a significant difference in mean of effectiveness of OSH-MP15 between sectors was found for general workers [F (11, 348) =4.52, p<0.001], OSH practitioners [F (11, 338) =2.28, p=0.011], employers [F (11, 297) =5.74, p<0.001]. **Conclusion:** There was a significant difference between the effectiveness of fostering, and enhancing government leadership and inculcating preventive workplace culture among respondents. This study acts as the baseline data for the effectiveness of Occupational Safety and Health Master Plan 2015 in enhancing government leadership and preventive workplace culture.

Keywords: Occupational Safety, health, leadership, prevention, accidents

*Corresponding author:

Associate Professor Shamsul B.M Tamrin,
Email: shamsul_bahri@upm.edu.my;
Tel: +0603 8947 2394 ; Fax: + 0603 8947 2394

INTRODUCTION

According to the annual report of Social Security Organization (SOCSCO) 2014, about 248 programs have been carried out to reduce the number of accident as envisaged in the Occupational Safety and Health Master Plan 2015 (1). The effectiveness of safety programs could not be measured conventionally, but by measuring responses from the entire organization to assess the safety system (2). To date, there is lack of study regarding the effectiveness of master plan on the Occupational Safety and Health Master Plan that have been conducted in Malaysia or other countries before.

The Ministry of Human Resources has declared that the Occupational Safety and Health Master Plan for Malaysia 2015 was intended to increase awareness, knowledge and commitment to occupational safety and health in all undertaking to reduce the number of injuries, diseases and fatalities. Furthermore, the master plan will provide the action framework to back up and complement legislative framework from Occupational Safety and Health Act (OSHA) 1994 (3). The main objective of OSHMP-15 for Malaysia is to build a safer and healthier workplace through cultivating, creating and sustaining the safe and healthy work culture in all organizations throughout Malaysia. Thus, this master plan aims to achieve four goals; firstly, to increase the awareness and knowledge in occupational safety and health, as well as commitment to occupational safety and health in all undertakings both big and small business; secondly, to reduce the rates of workplace injuries and associated fatalities; thirdly to reduce the number of occupational

lung diseases, occupational noise induced hearing loss and occupational skin diseases; and lastly to minimize their adverse impacts on efficiency, productivity and business performance (3). Moreover, the Ministry of Human Resources set OSHMP-15 as the middle stage of the three consecutive 5-year action plans that began in 2005 and will end in 2020 with the safety culture achievement. The first stage of the action plan that began in 2010 and ended in 2015 focused on spreading out occupational safety and health (OSH) ownership to all key stakeholders and social partners. The second stage of the action plan was the Occupational Safety Health Master Plan for Malaysia 2015 (OSH-MP 15) which focused on building and sustaining the culture of self-regulation. While, the third stage of action plan focused on preventive culture (3).

Based on Article 2 of C187- Promotional Framework for Occupational Safety and Health Convention 2006, each member that ratifies this convention shall promote continuous improvement of OSH to prevent occupational injuries, diseases and death, by development, in consultation with the most representative organizations of employers and workers, of a national policy, national system and national programs (4).

There are four key strategies and expected outcome from this master plan. First strategy is fostering and enhancing government leadership and practices. Second strategy is inculcating preventive workplace culture. Third strategy is industry leadership and business and community engagement. Fourth strategy is strong partnership locally and internationally (3).

Management leadership is one of the components of effective health and safety management system (5). Next, the management at all levels should demonstrate support towards health and safety program (5). Besides, other fundamental element of safety management is employees involvement since it will help the organization to achieve the goal and objective of OSH implementation and improvement that benefit both employee and organization (6).

Safety culture is defined as “the set of belief, norms, attitude, roles, social and technical practices that are concerned with minimizing the exposure of the employees, managers, customers and members of the public to conditions considered dangerous or injurious (7). As a result of the Chernobyl nuclear accident in the Soviet Union in 1986, the concept of safety culture existed (8).

There is limited study to evaluate the effectiveness of OSH in Malaysia. Therefore, the purpose of this study is to determine the effectiveness of Occupational Safety Health Master Plan for Malaysia 2015 (OSH-MP 15) between different sectors among general workers, OSH practitioners and employers.

METHOD

Participants

There were 309 employers, 360 general workers and 350 Occupational Safety and Health personnel and committee members of Occupational Safety and Health in Malaysia participated in this study. The participants involved in this study have age ranged between 18 to 60 years. The study populations covered both male and female, local general workers, OSH personnel with or without green book, and all employers including human resources or operation managers. However, foreign general workers were excluded from this study. Informed consent was taken from the participants. The participants were selected by using simple random sampling from 14 states of Malaysia as well as Wilayah Persekutuan. The selection of participants for each state was based on the types of industries and the list given by the Department of Occupational Safety and Health.

Sample size

The sample size was calculated by using Lameshow, Klar and Lawanga (9). The formula was used as follow:

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} (\sigma^2)}{d^2}$$

Where,

N = sample size

$Z^2_{1-\frac{\alpha}{2}}$ = confidence interval

p = estimated proportion (19.7% proportion safety compliance) (10)

d = desired precision (0.05)

$$n = \frac{1.96^2 (0.197)}{0.05^2}$$

n = 303

An addition of 10% was made to the sample size to overcome the problem of non-responses and drop out during the data collection Thus, the total of sample size was 333.

Data collection

The questionnaires were distributed to different type of industries in 14 states and Wilayah Persekutuan. For each state, there were 25 self-administrated questionnaires distributed. The duration of each session was approximately 10 minutes. During the data collection, researchers were available to answer to any questions given by the participants.

Instrument

The self-structured questionnaire modified from Occupational Safety and Health Master Plan 2015 was used as the main instruments in this study (3). Three different questionnaires were distributed to three different groups of respondents (general workers, OSH practitioners and employers). The questionnaire was attached in the appendix. Each set of the questionnaire included the three following sections:

- Section A consisted of questions on socio-demographic characteristics,
- Section B consisted of questions related to the strategy 1 of Occupational Safety and Health Master Plan 2015 to evaluate the fostering and enhancing government leadership,
- Section C consisted of questions related to the strategy 2 to evaluate the inculcating preventive workplace culture.

Validity & reliability tests

Content validity

Researchers ensured to get accurate and high-quality data in this study. Therefore, Focus Group Discussion (FGD) was conducted, where experts in OSH field from different companies had gathered and the questionnaire was discussed and reviewed with researchers and academicians. Questions were edited to be suitable and understandable the three target groups (11).

Face validity

10% of the required sample size was used in the pilot study to ensure a face validity and reliability of the questionnaire. A total of 30 respondents were chosen randomly from agriculture sector for interview to determine if the questions allowed the group to understand the content as they were requested to state any difficulties encountered in understanding the questionnaire (11).

Reliability test

The reliability of the questionnaire was evaluated by calculating the internal consistency of the scales using Cohen's kappa coefficient with an interval of one week. The correlation coefficient values were between 0.80 and 1.00 which demonstrated a strong association exists, and that reflects a good reliability levels test-retest.

Ethical consideration

This study has been approved by the Ethics Committee for Research involving Human Subject of Universiti Putra Malaysia under the reference: UPM/TNCPI/RMC/1.4.18.2 (JKEUPM). Written consent forms were given to the respondents to explain about the entire process throughout the research. All the information collected during the study were confidential and used within context of the study.

Statistical Analysis

For analysis, the data were entered and processed using SPSS 22.0 software. The normality was checked using the Shapiro-Wilk Test. Descriptive statistics for frequency and percentage were used to summarize the data. One way ANOVA was used to compare the means between the different categories, for significance level, $p < 0.05$. Post-hoc analysis was used for further analysis.

RESULTS

Face validity

All the respondents commented positively on the content of the questionnaire which verified that the content of questionnaire can be understood.

Socio-demographic

There were 1019 respondents participated in this research which constituted of 360 local general workers, 350 OSH personnel and committee members and 309 employers of the workplace (Table 1).

Fostering and enhancing government leadership

Table 2 shows the percentage of fostering and enhancing government leadership under Occupational Safety and Health Master Plan Malaysia 2015 (OSHMP 15) among general workers, OSH personnel and employers.

Inculcating preventive workplace culture

Table 3 shows the percentage of inculcating preventive workplace culture under Occupational Safety and Health Master Plan Malaysia 2015 (OSHMP 15) among general workers, OSH personnel and employers.

Comparison on the effectiveness of Occupational Safety and Health Master Plan according to sectors among general worker

The comparison on the effectiveness of Occupational Safety and Health Master Plan Malaysia 2015 according to sector among general workers is shown in Table 4. The scores were calculated for each strategy: yes, indicated one (1) score and no was indicated by zero (0) score. The mean and standard deviation of the score for each strategy were computed and used to compare the effectiveness of the master plan between strategy 1 and 2. For strategy 1, there was a significant difference of mean effectiveness of OSHMP 15 between the sectors $F(11, 348) = 12.06$, $p < 0.001$, while for strategy 2, there was a significant difference of mean effectiveness of OSHMP 15 between the sectors $F(11, 348) = 4.52$, $p < 0.001$.

For general workers post-hoc analysis of strategy 1, it was found that the mean differences were significant between manufacturing and trade; banking and finance; manufacturing and government service; manufacturing and wholesale and retail; agriculture, forestry, fishing

Table 1. Socio-demographic characteristics of respondents

	General worker (N=360)	OSH Personnel (N= 350)	Employer (N=309)
Gender			
Male	242	238	199
Female	118	112	110
Age			
18-25	75	24	-
26-35	142	159	5
36-45	82	86	110
46-55	52	60	151
56-60	9	21	43
Educational Level			
Not Attending school	21	2	-
Primary Education	29	5	1
Secondary Education	200	187	10
Tertiary Education	110	156	298
Duration of employment (Year)			
<1	27	29	11
1-3	114	153	87
3-5	66	84	60
>5	153	84	151
Sector			
Manufacturing	193	209	125
Agriculture, Forestry, Fishing	17	15	54
Transportation and Communication	15	1	1
Trades, Banking and Finance	20	4	2
Governmental Services/ Statutory Bodies	18	15	5
Oil and Gas	8	19	9
Construction	18	9	23
Mining and Quarrying	4	2	2
Utilities	3	3	9
Business and Services	21	14	17
Hotel and Restaurant	21	22	38
Wholesale and Retail	25	37	24

and trade; banking and finance; agriculture, forestry, fishing and government service; agriculture, forestry, fishing and wholesale and retail; transportation and communication and government service; transportation and communication and wholesale and retail; trade, banking and finance and construction; trade, banking and finance and hotel and restaurant; government service and construction; government service and hotel and restaurant; construction and business and services; construction and wholesale and retail; business and service and hotel and restaurant; hotel and restaurant and wholesale and retail. For other pairs, there was no significant difference occurred.

Post-hoc analysis for strategy 2 obtained significant mean difference between manufacturing and wholesale

and retail; agriculture, forestry, fishing and wholesale and retail; government service and construction; construction and wholesale and retail, whereas no significant difference was found for other pairs.

Comparison on the effectiveness of Occupational Safety and Health Master Plan according to the sectors among OSH personnel.

Table 5 presents the comparison on the effectiveness of Occupational Safety and Health Master Plan according to the sectors among OSH personnel. For strategy 1, there was no significant difference towards mean effectiveness of OSHMP 15 between the sectors F (11, 338) =1.19, $p=0.033$), while for strategy 2, there was significant difference of mean effectiveness of OSHMP 15 between the sectors F (11, 338) =2.28, $p=0.011$).

Table 2. Fostering and enhancing government leadership under OSH-MP 15 among respondents

	Yes [N (%)]	No [N (%)]
General worker(N=360)		
Did you notice OSH policy or any statement?	338 (93.9)	22 (6.1)
Did you know at least one OSH law	315 (87.5)	45 (12.5)
Did you involved in OSH activities or programs	173 (48.1)	187 (51.9)
Did you received any training related to OSH from your employer before starting new task	283 (78.6)	77 (21.4)
Did your employer provide the safe and suitable equipment/tools based on safety procedure and work instruction?	306 (85.0)	54 (15.0)
OSH Personnel (N=350)		
Did your company aware on Occupational Safety and Health Master plan of Malaysia 2015 (OSHMP 15)	240 (68.6)	110 (31.4)
Did you know at least one OSH law	320 (91.4)	30 (8.6)
Did you involved in OSH activities or programs	277 (79.1)	73 (20.9)
Management shows the determination to maintain the safety of environmental workplace	323 (92.3)	27 (7.7)
Management provide reward to maintain the safety environmental workplace	244 (69.7)	106 (30.3)
Employer (N=309)		
Do your company aware of the Malaysian OSHMP 15?	205 (66.3)	104 (33.7)
Do your company aware about new OSH legislation?	221 (71.5)	88 (28.5)
If yes, does your company implement	213 (68.9)	96 (31.1)
Does the existing OSH legislation still relevant to your company	263 (85.1)	46 (14.9)
Does any code of practice and guideline within legislative framework have been introduced in your company?	189 (61.2)	120 (38.8)
Are your company experiencing difficulties in complying with legal requirement that overlap (e.g :DOSH vs. CIDB)	52 (16.8)	257 (83.2)
Does your company conduct calculation of accident cost?		
Does your company aware of the National World OSH day?	138 (44.7)	171 (55.3)
Does your company aware the existing and function of National Council OSH (NCOSH)?	114 (36.9)	195 (63.1)
If yes, do your company involve in any NCOSH's events	105 (34.0)	204 (66.0)
Do your company aware the existing and function of international collaboration (OSHNet)	62 (20.1)	247 (79.9)
Do your company aware about OSHMP 2020	109 (35.3)	200 (64.7)
Do your company is ready to accept and implement OSHMP 2020 by the government?	103 (33.3)	206 (66.7)
	164 (53.1)	145 (46.9)

For OSH practitioners post-hoc analysis for strategy 1, the mean differences were significant between the manufacturing and hotel and restaurant. For strategy 2, the mean differences were significant between the manufacturing and hotel and restaurant.

Comparison on the effectiveness of Occupational Safety and Health Master Plan according to sectors among employers.

Table 6 depicts the comparison on the effectiveness of Occupational Safety and Health Master Plan according to the sectors among general workers. For strategy 1, there was significant difference of mean effectiveness of OSHMP 15 between the sectors ($F(11, 297) = 5.74, p < 0.001$), while for strategy 2, there was significant difference of mean effectiveness of OSHMP 15 between the sectors ($F(11, 297) = 5.79, p < 0.001$).

The subsequent post-hoc analysis suggest that the means of the strategy 1 between sector A and sector B and also between sector G and sector H were significantly different for employers of strategy 1. It showed that the mean differences were significant between the manufacturing and agriculture, forestry, fishing; agriculture, forestry, fishing and trade, banking and finance; agriculture, forestry, fishing and government service; agriculture, forestry, fishing and construction; agriculture, forestry, fishing and utilities; agriculture, forestry, fishing and business and services; agriculture, forestry, fishing and wholesale and retail; utilities and hotel and restaurant. Meanwhile, the post-hoc analysis for strategy 2 revealed that the mean differences were significant between the manufacturing and agriculture, forestry, fishing; agriculture, forestry, fishing and construction; agriculture, forestry, fishing and utilities;

Table 3. Inculcating preventive workplace culture under OSH-MP 15 among respondents

	Yes [N (%)]	No [N (%)]
General worker (N=360)		
Do you aware of the risk in your occupation?	329 (91.4)	31 (8.6)
The management offer rewards for safe work practices	155 (43.1)	205 (56.9)
I will report to management about any potential hazards at my workplace	326 (90.6)	34 (9.4)
I know what to do if I get injured/emergency situation.	326 (90.6)	34 (9.4)
OSH Personnel (N=350)		
I know the place of extinguisher at my workplace	327 (93.4)	23 (6.6)
I will report to management about any potential hazards at my workplace	331 (94.6)	19 (5.4)
I know what to do if I get injured/emergency situation.	327 (93.4)	23 (6.6)
Employer (N=309)		
Do the company develop OSH program in different language to reach out the foreign workers	113 (36.6)	196 (63.4)
Do the company include your supplier, vendors or subcontractors in your OSH program	147 (47.6)	162 (52.4)
The company shall provide more expenses toward OSH programs	190 (61.5)	119 (38.5)
The fund for OSH awareness program sufficient		
Did your company financially support you when it comes to organizing OSH program	162 (52.4)	145 (47.6)
	175 (56.6)	134(33.4)

Table 4. Comparison the effectiveness of OSH-MP 15 based on sectors among general workers

		Mean (SD)	F-statistic (df)	p-value
Strategy 1	Manufacturing	4.18 (0.85)	12.06 (11,348)	<0.001*
	Agriculture, Forestry, Fishing	4.52 (0.51)		
	Transportation and Communication	3.93 (1.22)		
	Trades, Banking and Finance	2.95 (1.31)		
	Governmental Services/Statutory Bodies	2.66 (1.32)		
	Oil and Gas	3.50 (1.77)		
	Construction	4.77 (0.42)		
	Mining and Quarrying	3.50 (1.91)		
	Utilities	3.33 (0.57)		
	Business and Services	3.57 (1.59)		
	Hotel and Restaurant	4.71 (0.56)		
	Wholesale and Retail	2.56 (1.58)		
Strategy 2	Manufacturing	3.30 (0.63)	4.52 (11,348)	<0.001*
	Agriculture, Forestry, Fishing	3.47 (0.51)		
	Transportation and Communication	2.80 (1.37)		
	Trades, Banking and Finance	3.00 (0.79)		
	Governmental Services/Statutory Bodies	2.66 (0.90)		
	Oil and Gas	2.87 (1.12)		
	Construction	3.66 (0.59)		
	Mining and Quarrying	3.50 (1.00)		
	Utilities	3.00 (0.00)		
	Business and Services	2.80 (1.20)		
	Hotel and Restaurant	3.14 (0.91)		
	Wholesale and Retail	2.48 (1.12)		

One-way ANOVA

*p-value significant at 0.05 level

Table 5: Comparison the effectiveness of OSH-MP 15 based on sectors among OSH personnel

		Mean (SD)	F-statistic (df)	p-value
Strategy 1	Manufacturing	4.15 (1.17)	1.19 (11,338)	0.033
	Agriculture, Forestry, Fishing	4.13 (0.91)		
	Transportation and Communication	3.20 (1.78)		
	Trades, Banking and Finance	4.00 (0.81)		
	Governmental Services/Statutory Bodies	3.60 (1.45)		
	Oil and Gas	3.94 (1.80)		
	Construction	4.63 (0.50)		
	Mining and Quarrying	3.50 (1.00)		
	Utilities	4.66 (0.57)		
	Business and Services	3.57 (1.55)		
	Hotel and Restaurant	3.18 (1.94)		
Wholesale and Retail	3.97 (1.04)			
Strategy 2	Manufacturing	2.86 (0.54)	2.28 (11,338)	0.011*
	Agriculture, Forestry, Fishing	3.00 (0.00)		
	Transportation and Communication	2.40 (1.34)		
	Trades, Banking and Finance	3.00 (0.00)		
	Governmental Services/Statutory Bodies	3.00 (0.00)		
	Oil and Gas	2.52 (1.12)		
	Construction	3.00 (0.00)		
	Mining and Quarrying	3.00 (0.00)		
	Utilities	3.00 (0.00)		
	Business and Services	2.57 (1.08)		
	Hotel and Restaurant	2.31 (1.28)		
Wholesale and Retail	2.89 (0.51)			

One-way ANOVA

*p-value significant at 0.05 level

agriculture, forestry, fishing and business and services;
 agriculture, forestry, fishing and hotel and restaurant;
 agriculture, forestry, fishing and wholesale and retail;
 hotel and restaurant.

DISCUSSION

This study has been conducted to determine the effectiveness of Occupational Safety and Health Master Plan (OSH-MP15) among 360 general workers, 350 OSH personnel and 309 employers in Malaysia.

Percentage of fostering and enhancing government leadership among respondents

Fostering and enhancing government leadership is one of the strategies with the involvement of government agencies and employers to collaborate with one another and coordinate intervention activities for promoting safety culture at the workplace. This study exhibited that the involvement of general workers in OSH programs was 48.1% being as the lowest percentage recorded compared to other criteria. According to Podgórski (12), workers and their representative should actively involve in designing, implementing, maintaining and improving OSH. Furthermore, employee participation,

communication and feedback were significantly related to injury rate (8). In addition, the involvement of workers in OSH related programs or activities helps to promote effective prevention principle and support the understanding of safe work practice among workforce (12). In discussing this issue further, the employers were found to be less aware about the OSH activities, for example National World OSH day, National Council OSH (NCOSH), NCOSH's events, internal collaboration (OSHnet) and OSHMP 2020. Consequently, less OSH activities and programs were held.

OSH practitioners were well informed and aware on the fostering and enhancing government leadership as mentioned in an act under Section 29 Subsection 4, the safety and health officer shall possess such qualify training as the minister may, by notification in the gazette, from time to time (13).

Percentage of inculcating preventive workplace among respondent

Current study showed that the management hardly encourage employee by offering rewards. According to Hagan et al., (10) incentive, recognition and awards are acceptable features to motivate employees to perform safety in workplace. Besides, direct influence of safety

Table 6: Comparison the effectiveness of OSH-MP 15 based on sectors among employers

		Mean (SD)	F-statistic (df)	p-value
Strategy 1	Manufacturing	6.23 (3.04)	5.74 (11,297)	<0.001*
	Agriculture, Forestry, Fishing	3.77 (4.03)		
	Transportation and Communication	7.50 (3.87)		
	Trades, Banking and Finance	9.00 (2.64)		
	Governmental Services/Statutory Bodies	9.60 (4.87)		
	Oil and Gas	5.33 (3.93)		
	Construction	7.17 (4.32)		
	Mining and Quarrying	9.00 (3.00)		
	Utilities	10.22 (1.98)		
	Business and Services	8.94 (3.34)		
	Hotel and Restaurant	5.81 (3.34)		
Wholesale and Retail	7.13 (3.03)			
Strategy 2	Manufacturing	2.47 (1.64)	5.79 (11,297)	<0.001*
	Agriculture, Forestry, Fishing	1.24 (1.74)		
	Transportation and Communication	4.00 (0.81)		
	Trades, Banking and Finance	2.66 (1.52)		
	Governmental Services/Statutory Bodies	2.00 (2.00)		
	Oil and Gas	3.50 (2.07)		
	Construction	3.17 (1.55)		
	Mining and Quarrying	3.33 (0.57)		
	Utilities	4.00 (0.70)		
	Business and Services	3.23 (1.39)		
	Hotel and Restaurant	2.83 (1.44)		
Wholesale and Retail	3.34 (1.64)			

One-way ANOVA

*p-value significant at 0.05 level

promotion policies on safety participation has been resulted from the encouragement and rewards (14). According to Vredenburg (15), people are motivated to behave in a way that leads to the desired consequences, and modifies their behavior if it perceived that compliance will lead to the desired outcome. Next, this study also showed that the employers were less aware on foreign language. Besides, it was found that most of the employers have not included suppliers, vendors or subcontractors in the OSH programs conducted by the company. The OSH practitioners well well informed and aware on the fostering and enhancing government leadership as mentioned under OSHA 1994, Section 29 Subsection 4, where the OSH officer shall possess such qualify training as the minister may made notification in the gazette from time to time.

Comparison on the effectiveness of OSH-MP 15 according to sector among general workers

The mean effectiveness of enhancing government leadership among general workers between sectors was significantly the highest in construction sector, followed by hotel and restaurant sector and manufacturing sector. These three sectors were high risk sectors. The enforcement of safety management by the government

increases the attention of contractor in implementing safety system (16). According to Lu and Yang 2010, the safety leadership and safety behavior are the important factors for effective safety management. The mean effectiveness of inculcating preventive workplace culture was significantly the highest in construction sector and followed by mining and quarrying sector and agriculture, forestry and fishing sector. These three sectors have similarities, namely the involvement of outside activities. The management support has been identified as the most influential support (17).

Comparison on the effectiveness of OSH-MP15 according to sectors among OSH practitioners

The mean effectiveness of enhancing government leadership among OSH practitioners between sectors was significantly the highest recorded in utilities sector and followed by construction sector and manufacturing sector. Management commitment in implementing and comply with OSH is more effective in raising the level of OSH awareness (18). Compliance with the top management is essential for the success of OSH and reducing the rate of accidents. Overall, OSH practitioners are currently applying the preventive workplace culture in the workplace.

Comparison on the effectiveness of OSH-MP 15 among employers

The effectiveness of enhancing government leadership among employers between sectors was significantly the highest in governmental service, followed by mining and quarrying sector and trades and banking and finance sector. These three sectors were known as high risk industries. According to Mitchison and Papadakis (19), an effective safety management improves level of safety in organization and can reduce the damage and harm. Vital organizational culture determines that the employees and employers have high priority to implement the best practices in safety and health (20). The effectiveness of inculcating preventive workplace culture among employers between sectors was significantly the highest in transportation and communication sector, followed by utilities sector and oil and gas. These three sectors have similarities as high risk sectors. Management commitment, safety training and scheduling and journey planning are confirmed as the statistically significant predictor of safety (21).

CONCLUSION

This research concerned on the effectiveness of implementation of the Occupational Safety and Health Master Plan 2015 (OSH-MP15). This study also has been carried out to enhance the awareness on preventive workplace culture among workers at the workplace. The main limitation in this study was time constraint, where the difficulties emerged due to time consuming to collect the data from various states to represent the real situation in Malaysia. Overall percentage of enhancing government leadership among general workers, OSH practitioners and employers showed that the respondents were well informed with the program proposed by the government. Besides, the overall percentage of inculcating preventive workplace culture among general workers, OSH practitioners and employers proved that the respondents have been practicing good preventive culture at workplace. There was significant difference between the effectiveness of fostering and enhancing government leadership and inculcating preventive workplace culture among respondents. This result will act as the baseline data for the effectiveness of fostering and enhancing government leadership and preventive workplace culture. For future research, there is a need to conduct continuous study on identification of strength and weakness of the master plan. Where this study will be able to improve and enhance the effectiveness of master plan as guideline and references in future.

ACKNOWLEDGEMENTS

The authors would like to express their deepest gratitude to all respondents who participated in this study, and Department of Occupational Safety and Health officers

for their assist. Without their full support, the study will not be able to be conducted smoothly.

REFERENCES

1. Social Security Organisation (SOCSO). Annual Report 2014 [Internet]. PERKESO 2004. Available from: https://www.perkeso.gov.my/images/laporan_tahunan/Laporan_Tahunan_2014.pdf
2. Bailey C, Petersen D. Using perception surveys to assess safety system effectiveness. *Professional Safety*. 1989;34(2): 22-26.
3. Ministry of Human Resources. Occupational Safety and Health Master Plan for Malaysia 2015; 2008 [Internet]. Available from: <https://doi.org/10.1017/CBO9781107415324.004>
4. Convention C187. Promotional Framework for Occupational Safety and Health Convention [Internet], 2006 (No. 187) [cited 4 January 2017]. Available from: http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB%3A12100%3A0%3A%3A%3A%3A%3AP12100_ILO_CODE%3AC187.
5. Akpan EI. Effective Safety and Health Management Policy for Improved Performance of Organizations in Africa. *International Journal of Business and Management*. 2011;6(3): 159–165.
6. Podgórski D. Workers' Involvement—A Missing Component in the Implementation of Occupational Safety and Health Management Systems in Enterprises. *International Journal of Occupational Safety and Ergonomics*. 2005;11(3):219-231.
7. Turner BA, Pidgeon N, Blockley D, Toft B. Safety culture: its importance in future risk management. InPosition paper for the second World Bank workshop on safety control and risk management, Karlstad, Sweden 1989 Nov 6 (pp. 6-9).
8. Ali H, Azimah Chew Abdullah N, Subramaniam C. Management practice in safety culture and its influence on workplace injury. *Disaster Prevention and Management: An International Journal*. 2009;18(5):470-477.
9. Lemeshow S, Hosmer D, Klar J, Lwanga S. Adequacy of sample size in health studies. Chichester: Wiley; 1990.
10. Hagan PE, Montgomery JF, O'Reilly JT. Accident Prevention Manual for Business and Industry. 12th ed. Illinois: NSC; 2001.
11. Shariat A, Tamrin S, Mohd B, Arumugam M, Danaee M, Ramasamy R. Prevalence rate of musculoskeletal discomforts based on severity level among office workers. *Acta Medica Bulgarica*. 2016;43(1):54-63.
12. Podgórski D. Workers' Involvement—A Missing Component in the Implementation of Occupational Safety and Health Management Systems in Enterprises. *International Journal of Occupational Safety and Ergonomics*. 2005;11(3):219-231.
13. Department of Occupational Safety and Health. Occupational Safety and Health Act 1994 (Act 514)

- regulations and orders. Petaling Jaya: International Law Book Services; 2016.
14. Vinodkumar MN, Bhasi, M. Safety management practices and safety behaviour: Assessing the mediating role of safety knowledge and motivation. *Accident Analysis and Prevention*. 2010;42(6):2082–2093.
 15. Vredenburg AG. Organizational safety : Which management practices are most effective in reducing employee injury rates ?. 2002;33:259–276.
 16. Zeng SX, Tam VWY, Tam CM. Towards occupational health and safety systems in the construction industry of China. *Safety Science*. 2008;46:1155–1168.
 17. Mustapha FH, Naoum S. Factors influencing the effectiveness of construction site managers. *International Journal of Project Management*. 1998;16(1):1-8.
 18. Aziz AA, Baruji ME, Nooh MN, Fadhilah N, Him N. A preliminary study on accident rate in the workplace through Occupational Safety and Health management in electricity service. *Journal of Research in Business and Management*, 2015;2(12):9–15.
 19. Mitchison N, Papadakis GA. Safety management systems under Seveso II: Implementation and assessment. *Journal of Loss Prevention in the Process Industries*. 1999;12(1):43-51.
 20. Abdullah NA, Spickett JT, Rumchev KB, Dhaliwal SS. Assessing employees' perception on health and safety management in public hospitals. *International Review of Business Research Papers*. 2009;5(4):54-72.
 21. Mooren L, Grzebieta R, Williamson A, Olivier J, Friswell R. Safety management for heavy vehicle transport : A review of the literature. *Safety Science*, 2014;62:79–89.