ORIGINAL ARTICLE

OCCUPATIONAL SAFETY AND HEALTH RISK PERCEPTION AMONG MEDICAL LABORATORY WORKERS IN KLANG VALLEY

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ABSTRACT

Background : Risk management strategy at the workplace needs two way interactions between employee and employer. Therefore, study on risk perception among workers based on scientific analysis is needed to gain knowledge and understanding on how workers perceived risk at the workplace in order to design risk management strategies more effectively.

Methodology : A cross sectional study was carried out among 628 respondents from 36 medical laboratories in the public and private sector in Klang Valley. Using a self administered questionnaire, respondents were required to perceive risk on 30 hazards which have been identified in the medical laboratory. Each hazard was encoded by using Likert scale 1= not risky, 2= risky but low, 3= moderate risk, 4= high risk and 5= very high risk.

Result : Overall, the study showed that working in the medical laboratory was perceived to of moderate risk. When comparing among ethic groups, the Malays had the highest perception of risk (3.07±0.88) as compared with Indians (3.03±0.88) and the Chinese (2.78±0.90). Employee with higher education and position level perceived low level of risk compared to those with lower education and position level. For those working in different types of laboratories, there are significant difference on risk perception, (p=0.001). Employees who work in government sector perceived higher (3.12±0.93) risk compared to workers in private sector (2.85±0.88). In terms of OSH based knowledge, those with higher level of education and position have a high score knowledge on OSH compared to those have lower education and position level.

Conclusion : This **s**tudy showed that risk perception among workers in medical laboratory is influenced by socio-demography factor such race, education level, job position and the laboratory where the respondents are working.

Keywords : Risk Perception, Occupational Safety And Health, Medical Laboratory.

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INTRODUCTION

Key to the process of risk communication is an understanding of risk perception of the target groups[1]. Knowledge and understanding related to risk perception among employees and employers towards risk in workplace can help in ensuring effectiveness of risk communication process between them. Therefore, a strategy for the effectiveness of risk communications needs to have two directional interactions between employee and employer and also needs involvement from all personnel especially employees to achieve the occupational safety and health (OSH) objectives within the organization[2].

Generally, there is a significant difference in the perception of risks by "experts" who carry out the risk assessments and those who are subject to the risk such as workers. Then, failure to take these underlying perception differences into account when planning risk communication will make the outcome much less satisfactory[1]. Therefore, in assessing the target groups of workers, knowledge of risk perception of these target groups needs to be examined and also needs to identify subgroups, such as vulnerable groups and pay attention to their needs. In addition, there is a need to understand that the workers have a collective interest in health risks at workplace which affect them, even though they may not all be directly exposed to the same level of risk. In view of this, risk communication must focus and rigorously analyze the needs of each prospective target groups starting from the onset of the risk communication process[3].

The commonest barrier to the effective risk communication is the failure to deal adequately with perception in the target groups of workers. Therefore, it is essential to understand the target groups and, if necessary, to segment it on the basis of demographic, social, educational or other characteristic[1]. In medical laboratory sector, the main issue which needs to be handled is usually some employees have been selected for the job based on their skill, knowledge and specialization in his field and not based on qualification related to occupational safety and health. Therefore evaluation of level of knowledge in OSH is an issue that needs to be understood among workers in medical laboratory. The objective of this study is to determine how workers in medical laboratory perceive risk and relate it to their knowledge on OSH in their workplace based on socio-demography factors.

MATERIAL AND METHODS

A cross sectional study was conducted among 628 workers in 36 medical laboratories in Klang Valley included two medical laboratory of teaching hospitals from University Malaya Medical Centre (PPUM) and *Hospital Universiti Kebangsaan Malaysia* (HUKM), 17 public medical laboratories and 17 private medical laboratories.

This study was carried out using 2 sets of questionnaires; set A is to assess risk perception respondent for risk hazard in medical laboratory and set B is to assess level of knowledge related to the OSH issue. In evaluating risk perception, the respondent is required to document their perception of 30 hazards identified in medical laboratory and categorized them into 5 major groups. They are bio-hazard, physical hazard, chemical hazard, psychology hazard and ergonomics hazard. Each hazard is encoded using Likert scale[4]: 1= not very risky, 2= low risky, 3= moderate risk, 4= high risk and 5= very high risk. To assess knowledge related to respondent and OSH issue, 33 questions were related to OSH issues. Each question coded with "know" and "*do not know*". Data gained was analyzed using statistics SPSS program. Both questions of risk perception and OSH knowledge possessed high reliability with Croanbach Alpha values of 0.963 and 0.949, respectively. Evaluation on perception level of risk and knowledge related to OSH are carried out according to socio-demographic factors such as race, age, education, gender, marital status, working experience, income, laboratory unit place of work and service sector.

RESULTS

The total number of respondents is 628 which comprised of 22.9 % from medical laboratory of teaching hospitals, 54 % from public medical laboratory and 22.6 % from private medical laboratory.

The distribution of socio-demographic factor, from a total of 628 respondents, majority are women, 446 people (72.6 %) and 168 people men (27.4 %). Majority of them are Malays, 470 respondents (76.5 %), Chinese (71 respondents or 11.9%) and Indian (73 people respondents or 11.9 %).

Respondents' age range between 18 and 60 years old with the mean age of 32.7±10.4 (mean±SD). The majority (186 respondents) within of range 25 years to 29 years or 30.3 % followed with 163 respondents above 41 years of age (26.4%), then 150 respondents (24.4%) are less 25 years of age

and 116 respondents (18.9 %) are between age of 30 - 40 years. Most of the respondents had educational level at diploma or STPM certificate (366 respondents or 59.4%), followed 156 people (25.4 %) with degree and 98 respondents (15.6 %) respondent of the total are at lower secondary education.

A total of 220 respondents are in RM500- RM 2000 per month income group, 134 respondents (28.3 %) earning above RM2000 a month, 156 respondents (25.4%) earn between RM1000-1499 and 64 respondents (10.4 %) are earning less than RM999 a month. Majority of the respondents which account for 327 (53.3%) serve under 5 years of employment, 129 respondents (21%) exceed 16 years, 126 respondents (20.5%) serve between 6-10 years and 32 respondents (5.2 %) serve between 11-15 years.

Majority of the respondents are laboratory staff, 479 respondents (78%), followed with 75 respondents (12.2%) are scientific officers and medical officer, 42 respondents (6.8%) are managers or supervisors and 18 people or 2.9% are students or visitors.

Table 1 Mean score of risk perception compared to socio-demographic characteristics

Factor		n	mean±S.D	F_{ratio}	p value*
Race	Malay	484	3.07±0.88	3.232	0.04
	Chinese	71	2.78±0.90		
	Indian	73	3.03±0.88		
Educational level	Degree and above	157	2.83±0.83	5.73	0.003
	Diploma/ STPM	373	3.11±0.91		
	SPM/SRP	98	3.05±0.89		
Age	*≤25 year*	*150*	*2.98±0.89*	*0.603*	*0.613*
	26-29 year	*187*	*3.09±0.8*		
	30-40 year	121	3.05±0.86		
	≥ 41 year	170	2.99±0.95		
Income	≤ RM999	66	2.98±0.95	5.772	0.001
	RM1000-RM1499	158	3.09±0.94		
	RM1500-RM2000	225	3.17±0.86		
	≥ RM 2001	179	2.82±0.84		
Work experience	≤ 5 year	328	2.99±0.89	1.279	0.28
	6-10 year	126	3.17±0.85		
	11-15 year	36	3.01±0.93		
	≥ 16 year	138	3.01±0.93		
Position	Science Officer	76	2.65±0.75	7.623	0.001
	Manager/supervisor	43	2.86±1.05		
	Laboratory worker	491	3.12±0.87		
	Student/visitor	18	2.72±1.05		
Laboratory unit	Microbiology	174	3.18±0.84	5.555	0.001
	Chemistry pathology	148	2.82±0.88		
	Hematology	112	3.16±0.99		
	Histo& cytology	69	3.18±0.80		
	Multi discpline	125	2.87±0.85		
Service sector	Public labs	342	3.12±0.93	4.597	0.010
	Private labs	142	2.85±0.88		
	Teaching labs	144	3.01±0.79		

*** Level of significance is p< 0.05**

DISCUSSIONS

Risk perception of respondent for the risk hazard at work according to socio-demography

Table 1 showed that marital status and gender factor did not significantly affect perception to the risk in workplace. Results of this study agreed with findings in the study by Schutz and Wiedman[5], which shows that gender did not affect risk perception or the variance difference showed by gender is small and is not significant on certain risk.

Risk perception for hazard in the medical laboratory according to race groups showed significant difference (p=0.04) in risk perception score among the three races Malay, Chinese and Indian. This discovery might be influenced by tendency of certain races to work in certain sector. For example Chinese community tends to work in private sector laboratory while the Malays are more focused in government sector. In private sector most laboratories are multi discipline laboratory that is comprised of small unit laboratory which give limited service compared to laboratory in government sector which has larger and more complete medical laboratories services to the hospital. Therefore, the OSH risk in workplace may also be perceived differently by the respondents. The same view is expressed by Weber and Hsee[6], they mention that perception of evaluation of risk differs between cultures. In another example, Schutz and Widemann[5] find that Caucasian men have lower risk perception at work compared to non-white man. This is due to risk perception being determined by social and cultural factor, and every person has perceptions which differ for each different risk[7].

Table 1 showed that, age and work experience factor, had no significant difference (p>0.05) to evaluate their risk's perception. It is because age and experience work factor are interconnected with one another. The evaluation of risk perception showed differences compared to the study by Spurgeon[8]. She pointed out that perception of the risk was influenced by age. She explained that older employees have lower risk perception because they were accustomed with the risk of compared with the younger employee. Jobs position held by respondent were closely related with level of education and also their income. There were significantly differences of score risk perception according to education level (p=0.003), jobs (p=0.001) and income (p=0.001) between respondent. In addition, most of them who obtained a higher education holding good position at the management level do not reveal their injury or sickness ill with activity at work.

Table 1, showed that based on place or laboratory unit on duty, there exists significant difference in mean score of risk perception among respondents according to type of laboratory unit in the work place (p=0.001). While for service sector factor, it also shows a significant difference on score of risk perception according to the respective service sector (p=0.010). The difference in the assessment of risk perception among respondent who work in public sector and private laboratory is due to the differences in race and services provided. Among the private sector laboratory, most of them own limited and small laboratory unit categorized as multi laboratory discipline as compared with the laboratory in public sector. Therefore, exposure to hazard at work place is less compared with the public sector.

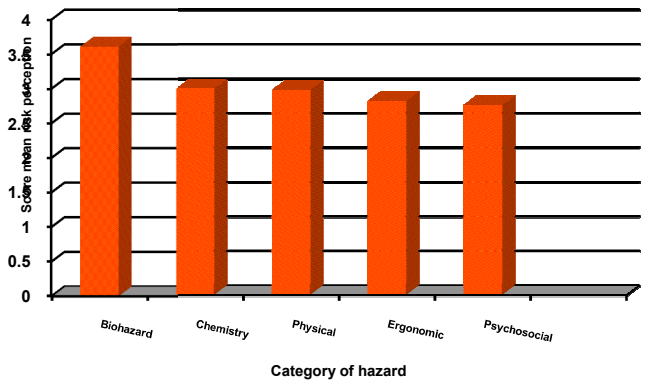

Figure 1: Score mean risk perception according to hazard category.

Figure 1 showed the mean score of risk perception among employee in medical laboratory. Risk in perception for bio-hazard is higher with the mean 3.61±1.06 (mean±S.D), followed with chemical hazards (3.00±1.08), physical hazards (2.98±1.06), ergonomic hazards (2.82±1.06) and psychosocial hazards (2.76±1.03).

Related respondent knowledge on occupational safety and health issue

This study showed that (Table 2), gender and race have no significant difference in level of OSH knowledge among respondents who work in medical laboratory. They have similar education background, obtained Diploma in Medical Laboratory Technology (DMLT) and related degree courses as qualifications to work in medical laboratory, thus their knowledge about risk in laboratory does not differ much among them because they are in the same cohort.

Level of education and position are closely related. This study showed that level of education (p=0.05) and position (p=0.003) of respondent, show there were significant difference in level of OSH knowledge among respondent. The level of OSH knowledge among respondents, showed significant difference (p=0.013) according to group of age. The result showed there were no significant differences in level of OSH knowledge among respondent according to type of laboratory work place and services sector between government and private sector.

Risk perception is influenced by several factors such as genetic, experiences in accidents, surrounding environment and media. It is clear that different people perceive similar risks differently[8]. Therefore, interest in these study has focused on the means by which the perception of risk may be amplified within certain group of workers and importance these factors for subsequent risk communication. Risk communications must focus and rigorously analyse the needs of each prospective audience at the onset of the risk communication process[3]. It should be determined which channels are the most appropriate for reaching the target audiences. Generally, face-to-face communications which establish dialogue are the most effective, but may not always be possible, and the various forms of the media may need to be used to the most suited to the messages and chosen channel[1].

Table 2 Comparison score of OSH knowledge compared to socio-demography factors

Sociodemography factor		n	mean±S.D	F_{ratio}	p value**
Gender	Men	175	15.93±7.99	1.687*	0.092
	Women	453	14.77±7.54		
Marrital	Unmarried	377	15.38±7.47	1.158*	0.247
Status	Married	251	6.03±5.23		
Race	Malay	484	14.94±7.53	2.500	0.083
	Chinese	71	14.30±8.00		
	Indian	73	16.90±8.14		
Educational	Degree and above	157	16.37±8.25	3.00	0.05
level	Diploma/ STPM	373	14.72±7.36		
	SPM/SRP	98	14.48±7.36		
Age	*<25 year*	*150*	*14.63±7.34*	*3.605*	*0.013*
	26-29 year	187	15.09±8.10		
	30-40 year	121	13.67±6.76		
	≥41 year	170	16.53±7.93		
Income	≤ RM999	66	15.69±8.31	2.477	0.060
	RM1000-RM1499	158	14.55±7.90		
	RM1500-RM2000	225	14.37±7.13		
	≥ RM 2001	179	16.27±7.80		
Work	≤ 5 year	328	14.82±7.93	0.553	0.647
experience	6-10 year	126	15.32±7.88		
	11-15 year	36	16.44±7.05		
	≥ 16 year	138	15.20±7.05		
Position	Medical/Science Officer	76	17.47±8.22	4.631	0.003
	Manager/supervisor	43	17.35±7.95		
	Laboratory worker	491	14.58±7.55		

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	Student/visitor	18	13.83±5.71		
Laboratory	Microbiology	174	15.43±7.49	**1.013**	**0.400**
unit	Chemistry pathology	148	15.38±7.63		
	Hematology	112	13.83±7.04		
	Histo& Cytology	69	14.86±7.09		
	Multi discipline	125	15.56±8.77		
Service	Public labs	342	15.57±7.73	**1.431**	**0.240**
sector	Private labs	158	14.64±8.18		
	Teaching labs	144	14.43±6.99		

*** Student t-test, level of significance p<0.05**

CONCLUSION

The study of perception is the foundation in risk management. Management of OSH risk perception is interrelated disciplines of risk communication. Risk perception is very important in order to understand how the workers perceive risk in workplace because it influences the probability of behavioral change[9, 10]. The information gained may give a choice to the organization to change current strategy to achieve zero injury in the work environment.

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