

ORIGINAL ARTICLE

SURVEY ON WORKING ENVIRONMENT POTENTIALLY TO SLIPS AND FALLS AMONG FOOD PRODUCTION INDUSTRY WORKERS

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ABSTRACT

Food production workstation is one of the workplace which manually handle by workers during production activities. The objective of this study is to identify the main factors contribute to slips and falls at food production industry. A qualitative method using survey through questionnaire and observation was utilized to identify the harmful working environment at food production workstation. A questionnaire survey was distributed among thirty workers at the selected food production industry. The findings from this study yielded that there are four main factors contribute to slips and falls accident at the food production and services. The factors are flooring (33.33%), footwear (20.00%), cleaning (13.33%), and environment (13.33%). The outcome can serve as a guideline for further study for better understand the association between lifting, fatigue issue in slip and fall factors at food production working area.

Keywords: working posture, food production, slip and fall

INTRODUCTION

Accommodation and Food Services sector is important to Malaysia in providing customers need for immediate consumption such as lodging and preparing meals. This sector has direct relationship with manufacturing industries. In average, food production workers spend minimum 8 hours and above per-day. During working hours, they are exposed to many sources of hazard at workplace. Standing position is normally used among food production workers to fulfill their task. Choi et. al (2007) found that Food Services workers are exposed to static and dynamic prolonged standing postures during working hours.

Figure 1 represent 14322 accident cases in Accommodation and Food Services Activities in Malaysia which have been reported to SOCSO from 2009 until 2015. In overall, 72.38% cases reported in males compared with female which are 27.62% cases. The line chart showed the ascending linear trendline from 2009 to 2015. Year 2013 was the highest accidents reported for Male and Female at Accommodation and Food Services Activities in Malaysia.

An investigation by Haukka et al., (2014) showed the part of physical workload, recreation time physical movement, heftiness and smoking in anticipating the event and course of multisite musculoskeletal torment among kitchen specialists.

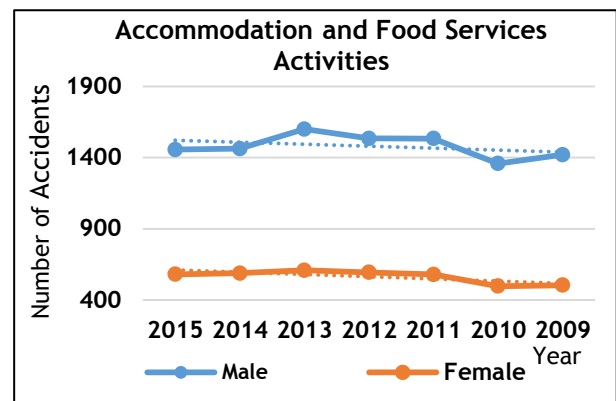


Figure 1 Number of Accidents at Accommodation and Food Services Activities

From the Annual Report of SOCSO clearly shows that Accommodation and Food Services workplace potentially asserted to risk of hazardous accidents, causing harms to the employees. If they lack of knowledge, awareness and careless on the safety rules, they might be the victims of slip and fall incidents. Theodore et. al. (2006) highlighted that food production or restaurant working environments are seriously hazardous place for slips and falls. Thus, this study aimed to identify the main factors contributing to slips and falls incident in the food production workplace.

Food production workstation is equipped with different types of tools, machine, raw materials and so on. These items comes with vary sizes and weight. Therefore hazard exist at food production workstation comes not only from equipment but also from workplace itself, task scheduling, management and workers.

METHODS

Questionnaires were distributed among forty workers aged 18 to 45 years old with at least 1-year experience in food production activities. During the data collection, workers have to answer the questionnaire given. At same time, observation were recorded using camera was done. In additional, workers who were experienced on slips and falls will be interviewed for further information. There were three parts in the questionnaire, such as:-

- a) Part A: Personal information
- b) Part B: Factors Contributing to SNF incident
- c) Part C: Employee experience based on workplace.

All data were analysed using Excel to obtain frequency, value, min and percentage.

RESULTS

The demographic information includes age, gender, working experience, education level, total working hours and part of body affected during working positions are presented in Table 1.

The workers 83.33% agree that they spent 8 hours working hours per day and 16.67% of then spend more than 8 hours per day at food production workstation. Some researcher found that when working with longer working hours, workers were revealing to more hazards (Cho EJ., 2001; Fredriksson et al., 1999; Byung Yong Jeong, 2015).

The workers stated that their leg (46.67%) is the main body part effected from their working position with, followed by hand (26.67%), back pain (10%) and waist (10%) and shoulder (6.67%). This result is supported by Grandjean and Hunting (1997) findings which stated that feet and legs were the risk of pain effected from standing postures at the workplace. Back pain and shoulder pain was reflected with lifting task (Sukadarin et al. 2016).

Table 1 Demographic information (n=30)

Age (Years)	n	%
18 - 25	8	26.67
26 - 30	10	33.33
31 - 40	10	33.33
41 and above	2	6.67
Working experience	n	%
less than 1 year	5	16.67
1 - 3 years	17	56.67
3 years and above	8	26.67
Educational level	n	%
SPM	5	16.67
Certificate	8	26.67
Diploma	14	46.67
Degree and above	3	10.00
working hours (per day)	n	%
less than 8 hours	0	0.00
8 hours	25	83.33
more than 8 hours	5	16.67
Body Part effect from working positions	n	%
Back pain	3	10.00%
shoulder	2	6.67%
waist	3	10.00%
Hand	8	26.67%
Leg	14	46.67%

Table 2 shows the frequency of Factors Contributing to slip and fall incident among food production industry. 40% of the workers have experienced on slips or falls accident at the workplace. And most of workers (56.67%) agree that they knew slips and falls hazard exist. However, in order to finish their work sometimes workers does not seriously and tend to ignore the safety and hazard (N.A. Ahmad et al., 2017).

Walking with carrying load (53.33%) is the highest working position during working period. It's followed by walking and standing. This outcome shown that at the food production workstation workers frequently walking, standing and at the same time carry load during their work session. This results showed similarities with other researcher findings which is prolong standing produce tiredness ((Mandy, 2002, N.A. Ahmad et al., 2017)). Working with harmful posture resulted awkward to certain part of the body (Deros BM et al., 2010) and this will produce fatigue to workers (Salleh, 2017).

The frequency of SNF factors arranged in descending order is as follows: Flooring (33.33%), Footwear (20.00%), Cleaning (13.33%), Environment (13.33%), Human (6.67%), Obstacles (6.67%), Contamination (3.33%) and

Health (3.33%). This similarly from the researcher findings that these factors contribute to slip and falls accident (N.A. Ahmad et al., 2017).

Table 2 Frequency of Factors Contributing to SNF incident (n=30)

Do you have any experience on slips or fall	n(%)
Yes	12(40.00)
No	18(60.00)
Is the drain cover available right now and safely	n(%)
Yes	20(66.67)
No	10(33.33)
Action after slips, trips or fall	n(%)
Nothing, just do the work	8(26.67)
Hazard exist but the work must be done	17(56.67)
Not sure, just do my work	5(16.67)
Working position	n(%)
walking + standing	12(40.00)
walking + sitting	1(3.33)
walking + standing + sitting	1(3.33)
walking + carry load	16(53.33)
Factors cause slips, trips or falls	n(%)
Flooring	10(33.33)
Contamination	1(3.33)
Obstacles	2(6.67)
Cleaning	4(13.33)
People or Human Factors	2(6.67)
Environment	4(13.33)
Footwear	6(20.00)
Health	1(3.33)
Floors condition at workplace	n(%)
Is the floor slippery when wet?	10(33.33)
Are there any trip hazards due to equipment and other objects left on the floor?	7(23.33)
Are there any tiles becoming unstuck or any holes or unevenness in the floor surface?	13(43.33)

From the Table 3, five factors from Part C questionnaire based on employee experience at workplace was highlighted in cleaning, task, footwear, environment and human factor.

Table 3: Part C: Employee experience based on workplace

1. Cleaning

Cleaning	%
Are wet floor signs not available or not used correctly?	29.41
Do spills (wet or dry) occur regularly during work processes?	22.06
Is there a build-up of polish on floors?	14.71
Do employees have to walk on floors wet from washing?	11.76
Is there an excessive residue of detergent?	7.35
Are paper, rubbish, dirt, spills etc. left on the floor?	7.35
Are there any trip hazards due to equipment and other movable objects left lying on the ground?	7.35
How often the floor is mop and dried?	
Before and after cooking process	56.67
When there is water and slippery	23.33
Every two hours	10.00
Every half an hour	3.33
Every one hour	3.33
Never	3.33

From Table 3 cleaning factor, it is reported that the wet floor signage (29.41%) are not properly displayed. It also been reported that during the work process, spills occurs regularly (22.06%). Also the workers walk on the wet floor during their working process. Therefore, as reported in previous studies, the wet floor, no proper signage and walking on wet floor is one of the main contributing factors for slip and fall in the workplace (Courtney et al., 2006). About 11.76% respond that workers have to walk on wet floors during working. This occurs especially when workers path away wet area such as sink area, on dishwashing activity area.

Data in Table 3 highlights that the cleaning process and done thoroughly before and after the cooking process (56.67%) followed 23.33% when there was water and slippery on the floor and 10% said that every two hours the floor will mop. However, there is lack of cleaning during the cooking process. It is also highlighted in previous studies that, most of the slip and fall does happen near this areas and there is some protocol for floor cleaning at restaurant (Filiaggi et al., 2003).

2. Tasks

Tasks	%
Are employees hurried due to time constraints?	33.33
Do employees have to walk or work on greasy, oily or wet floors that are not adequately slip resistant?	26.67
Are the loads to be carried excessive or likely to upset a person's balance?	23.33
Do heavy trolleys have to be pushed up ramps?	16.67

According to Table 3, the frequency of Task factors arranged in ascending order is as follows: 16.67% of respondent need to pushed heavy trolleys during working, 23.33% informed that they have to carry excessive loads, 26.67% responded they have to walk or work on greasy, oily or wet floors that are not adequately with slip resistant and 33.33% most of them in hurried due to time constraints. The likeness result featured redundant movement, prolonged standing and pulling overwhelming articles were the hazard action for Work-Related Musculoskeletal Disorders among providing food specialists (Subramaniam and Murugesan, 2015; National Research Council and the Institute of Medicine, 2001; Riihimäki, 2005).

3. Footwear

Footwear	%
Are the tread patterns clogged with dirt?	43.33
Are the tread patterns on safety footwear too worn?	30.00
Do the employees' safety shoes lack grip?	26.67

For the human factor criteria, Table 3(5) depict 34.21% respondent agreed that slip, trip or fall hazard give effect to their health. 21.05% informed that they always follow the safety procedure and they agreed that health condition can cause slippery to workers. 13.16% thought that their workstation was in the right location and 10.53% agreed that slip, trip or fall hazard will give them bad experience.

Refer to Table 3, footwear factor was respond with tread patterns clogged with dirt 43.33% followed by 30% think the tread patterns on safety footwear too worn and 26.67% respond that their safety shoes lack grip. The type of shoe material has different slip-resistant properties (Li et al., 2004).

4. Environment

Environment	%
All equipment is stored properly?	53.33
All cleaning equipment on site is reserved?	46.67
Security notice is on display	
Yes	63.33
No	36.67

For environment factor as table 3(4), 53.33% respondent respond that most of the equipment at food production workstation was stored properly and 46.67% affirm that cleaning equipment on site was reserved.

5. Human Factor

Human Factor	%
Do slip, trip or fall hazard give effect to your health?	34.21
Are you always follow the safety procedure?	21.05
Is the health condition can cause a person to be slippery?	21.05
Is the kitchen workstation in the right location?	13.16
Are slip, trip or fall hazard give you bad experience?	10.53

CONCLUSION

Food production workers are exposed to many hazards during working hours. The findings show that flooring, footwear, environment, and cleaning are the main factors contribute to slip and fall accident at food production industries. However human factors, lifting and contamination also should be considered in the problems. For further research is needed to better understand the association between lifting, fatigue and slip and fall factors at food production working area.

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