

Workers' Knowledge and Practice About Occupational Hazards and Safety Measures in Bakeries at Assuit city

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Abstract

Back ground: Processing in bakery generates diverse risk on exposed workers. **The Aim:** assess knowledge, and practices of workers towards occupational hazards and safety measures in bakeries at Assuit city .**Design:** A descriptive design was utilized. **Setting:** it was conducted in bakeries at Assuit city .**Sample:.** A systematic sample was used for selecting the study bakeries. Convenient sample was used (total coverage) for workers in chosen bakeries. Each bakery had average between 7 to 9 workers The total number was 87 workers. **Tools:** Two tools were utilized; I - Interview Questionnaire Sheet about demographic data , workers' knowledge about occupational hazards, injuries facing the workers. Worker's knowledge about safety measures. II- Observational Checklist was used to assess workers for using safety measures in the bakeries. **Results:** They clear that 2.3 % of the studied workers mentioned poor lighting consider from physical hazards. It was noticed that 17.3% of them sit or lie down workers in a cool or shady area consider from first aid for excessive heat. It show that majority of studied workers done personal hygiene. **Conclusion:** The majority of the bakeries workers had unsatisfactory knowledge and practice about occupational hazard and safety measures in the bakeries. **Recommendations:** Programs of health education should be organized and directed for workers to increase their awareness about hazards and safety measures.

Keywords: *Workers, Occupational hazards, Knowledge, Practices & Safety Measures.*

Introduction

Occupational health is a multidisciplinary activity aimed at: the protection of the health workers and promotion them by preventing accidents and diseases in occupation and by decreasing occupational factors and conditions hazardous to safety and health at work, the development and promotion of healthy and safe work, environments; and the adaptation of work to workers, and workers to their jobs. (WHO, 2011) Occupational hazards occur in all sectors of occupation. This term signifies both long-term and short-term risks associated with the environment workplace. Short term risks may include physical injury, while long-term risks may be increased risk of developing cancer or heart disease. Occupational injuries related workplace is responsible for reduced work capacity, increased temporary and permanent work disability. The high rate and early onset of chronic diseases contribute to the high expenditure of national health care systems. (Hämäläinen, et al., 2012), (WHO, 2012)

Workplace health hazards of bakery workers are chronic obstructive pulmonary diseases like emphysema and bronchial asthma. Injuries from accidents are equally common among bakery workers. These could arise from slips and falls on wet or uneven floor surfaces. (Fishwick et al., 2011)

Health hazards occur among bakery workers such as musculoskeletal disorders like muscle pains and arthritis arise from manual handling and moving of heavy loads for example while loading a vehicle may occur. Some chemicals hazards occurs in bakeries such as bleach used in cleaning bakeries could cause contact dermatitis and could also be hazardous to the eyes and the respiratory system. Exposure to noise can cause irreversible hearing damage. Indeed hearing defect is one of the commonest health problems among bakers. (Steiner et al., 2011)

protection of workers in their employment from risks resulting from factors adverse to health, adaptation of work to man, and each man to the job. Placing and maintenance of the workers in an occupational environment adapted to his physiological and psychological capabilities. Improvement working conditions; social security. Protection of workers where their employment contract is terminated.

(Stell man, 2014)

Occupational health nursing role covers sickness absence management, rehabilitation, health surveillance, health assessment, health screening, health promotion, research and development, policy, procedure and audit. Occupational health nurses have the potential to influence the health of a community and improve the general health of nation through

public health initiatives, reducing health inequalities, reducing social exclusion and sickness absence, by protecting and promoting the health of working population. (American Board for Occupational Health Nurses, 2012)

Significant of the study

In Egypt increases cases of injuries related to work during the year 2010 by 16.5 % to a record 18 495 compared to 15 878 cases in the year 2009, an increase of 2617 cases. (Central Agency for Public Mobilization and Statistics, 2012).

Major accidents among the work place health hazards of bakery represent 40% of injuries related to work are due to slips on wet floors or spillage of dough or other wet ingredients. Uneven and obstructed floor surfaces lead to tripping accidents. Also the heat associated with ovens in a bakery can be a hazard; the excessive heat can affect cardiovascular function for example, causing syncope (fainting) and other consequences. (North Lanarkshire Council, 2014)

Health hazards of bakery work are a matter of global concern today. Exposures to occupational hazards in bakeries are generally indicating poor safety standards, Careless handling and cause serious injuries and health problems. So the present study conducted.

The Study Aim

To assess knowledge, and practice of workers towards occupational hazards and safety measures in bakeries at Assuit city.

Research Questions

- What is the level of workers' knowledge about occupational hazards and personal protective measures in bakeries?
- Are the workers in bakeries use the personal protective equipments to avoid occupational hazards?

Subjects & methods

Design

A descriptive design was utilized

Setting

It was conducted at (5) bakeries in East city and (5) bakeries in West city at Assuit city.

Sample size

The total number of bakeries at Assuit city about (89 bakeries). It's divided into East and West. The sample included (11%) from total number of bakeries. Convenient sample was used (total coverage) for workers in chosen bakeries. Each bakery had average between 7 to 9 workers. All workers were included in this study. The total number was 87 workers.

Sampling technique

According to the Assuit Directorate of Supply record, divided bakeries into two geographical sectors East and West city Systematic random sample technique was used for selecting the study bakeries .The first bakery in the study was selected randomly from the record and then every eight one until the end of the sample.

Criteria of chosen sample

- All bakeries were included in the study affiliated to Assuit city.
- The sample included (11%) from total number of bakeries choosing randomly.
- This study was conducted at (5) bakeries in East city and (5) bakeries in West city at Assuit city by using systematic random sample.
- Convenient sample was used for workers in chosen bakeries. Each bakery had average between 7 to 9 workers

Tools of the study

The study included two tools:

The first tool was an interview questionnaire sheet based on relevant literature. This tool was divided into three parts:

Part (1): demographic characteristics such as (age, working system, previous workers training as occupational hazards, using safety measures and first aid)

Part (2): Worker's knowledge about meaning of occupational health, types of occupational hazards, and injuries facing the workers. Worker's knowledge about safety measures of occupational hazards. (Yossif. & Abd Elaal, 2012) & (Emmanuel & Sussan, 2014).

Part (3): Bakery workers' reporting practice about first aid for emergency situations as (excessive heat). (Yossif. & Abd Elaal, 2012)

The adopted scoring system for knowledge and reported practice as follow:

Scoring system designed for the assessment of knowledge was 7 questions and workers reporting practice was 7 questions, given 1 grade for correct answer and a zero was given for in correct answers and don't know. The score of each item summed-up and then converted into a percent score. (Satisfactory knowledge 50% and more, Unsatisfactory knowledge < 50%). (Khalaf, 2015)

The second tool: observational checklist

Using safety measures for bakeries workers as protective devices as apron, gloves, shoes, ear plugs, hand washing before and after working, and using body mechanics. (Yossif. and Abd Elaal, 2012) & (Emmanuel and Sussan, 2014)

Methodology**I-Administrative phase**

An approval letter was taken from the Dean of Faculty of Nursing, Assiut University and then from the Deputy Minister of Directorate supply to conduct the study. After full explanation about the aim of the study.

II-Pilot Study

A pilot study was carried out before starting data collection on (10%) workers, were excluded from the total number of study sample. The aim of pilot study was to test the clarity of tools, and to estimate the time required to fill the form. According to the result of the pilot study necessary modification was done.

Validity of tools

It was checked and revised by panel of three experts in the fields of community health nursing who reviewed the instrument for clarity, understanding and applicability.

Reliability test

Reliability was applied by the researchers for testing the internal of the tool, by administration of the same tools to the same subjects under similar conditions two time 15 days apart. Cronbach's Alpha reliability for knowledge was 0.791 and for practice were 8.43

III- Data collection Phase**Ethical Consideration**

The study was approved by ethical review committee Faculty of Nursing Assuit University. The workers were recruited to the study informed about the objectives of the study. A verbal consent was obtained from the workers. Confidentiality of obtained information was assured and used only for the purpose of the study.

Field work

Data were collected during the period from the first of September 2015 until the half of November 2015. It consumed about 2.5 months. The researcher couldn't divide the workers to groups to prevent work interruption. Each bakery worker was interviewed individually by introducing self to the workers then explaining the purpose of the study and obtaining his approval to participate in the study with confidentiality. The average time taken to complete each interview ranged from 20- 30 minutes. Each bakery contain from 7-8 workers collect data from each bakery 2 days per week. Every day meet 4 workers. Each bakery ending in 2 days per week until ending the sample in ten weeks.

Statistical analysis

Statistical analysis was done using software SPSS version 19. . (Frequency, percentage, mean and standard deviation) were calculated, as well as tests of significance. (Mann-Whitney, Kruskal Wallis test). P-value considered statistically significant when less than 0.05.

Results

Table (1): Distribution of bakeries' workers regarding to their Demographic characteristics at Assuit city, 2016. (N=87).

Variables	No. (n= 87)	%
Age: (years)		
< 25	35	40.2
25 - 30	21	24.1
> 30	31	35.7
Mean \pm SD (Range)	29.06 \pm 10.36 (15.0 – 55.0)	
Educational status:		
Illiterate/ read and write	30	34.5
Basic education	13	15.0
Technical secondary	44	50.5
Marital status		
Single	37	42.5
Married	50	57.5
Working system in the bakery		
Working at morning	34	39.1
Working at night	53	60.9
Years of experience in the bakery		
< 5 years	40	46.0
5 – 10 years	27	31.0
> 10 years	20	23.0
Mean \pm SD (Range)	7.56 \pm 7.03 (1 year- 30 yrs)	
Attending training courses		
Yes	21	24.1
No	66	75.9
Subjects of training courses		
Introduction to work and know the risks that can occur	11	52.4
How to deal in a state of emergency for occupational safety	10	47.6

Table (2): Knowledge about occupational hazards among studied bakeries' workers at Assuit city, 2016. (N=87)

Variables	No. (n= 87)	%
Definition of occupational health		
Correct	9	10.3
Incorrect	78	89.7
Physical hazards: ≠		
Heat and cold	78	89.7
Poor lighting	2	2.3
Noise	23	26.4
Biological hazards:		
Viruses	6	6.9
Bacteria	1	1.1
Viruses and bacteria	0	0.0
Don't know	80	92.0
Chemical hazards:		
Gases	0	0.0
Chemical liquids	23	26.4
Don't know	64	73.6

Variables	No. (n= 87)	%
Psychological hazards: ≠		
Stress	39	44.8
Fear	14	16.1
Insecurity	31	35.6
None	25	28.7

≠ There is more than one answer

Table (3): Distribution of bakeries' workers regarding to their reporting practice of first aid for excessive heat at Assuit city, 2016. (N=87).

First aid for excessive heat ≠	No. (n= 87)	%
Sit or lie worker down in a cool, shady area	15	17.3
Drink plenty of water	70	80.5
Cold compresses with/ice packs	64	73.6
Spraying cold water on all parts of the body	30	34.5
Place wet blankets	10	11.5
Eat a lot of fruit, fresh vegetables	22	25.0
Stand not in the sun under any circumstances	70	80.5

≠ There is more than one answer

Table (4): Distribution of bakeries' workers regarding to their Observational for using safety measures at Assuit city, 2016. (N=87).

Variables	Done		Not Done	
	No. (n= 87)	%	No. (n= 87)	%
Personal protective equipment				
- Wear Apron	0	0.0	87	100.0
- Wear Gloves	3	3.4	84	96.6
- Wear Shoes/ boots	83	95.4	4	4.6
- Wear Facemask	0	0.0	87	100.0
- Wear Hat	2	2.3	85	97.7
- Wear Ear plugs	1	1.1	86	98.9
Personal hygiene				
-Hand washing before and after beginning work	76	87.4	11	12.6
-Cleanliness of face, hair and nails	79	90.8	8	9.2
Using handkerchief	19	21.8	68	78.2
Using body mechanics	5	5.7	82	94.3

Table (5): Relationship between demographic characteristics of the bakeries' workers and total score of knowledge about occupational hazards and safety measures at Assuit city, 2016. (N=87).

Variables	Score of knowledge	P-value
	Mean ± SD	
Age: (years)		0.170
< 25 years	23.46 ± 3.50	
25 - 30 years	23.52 ± 2.73	
> 30 years	22.10 ± 3.28	
Educational status		0.001*
Illiterate / read and write	20.90 ± 3.85	
Basic education	22.62 ± 2.84	
Technical secondary	24.52 ± 1.95	

Variables	Score of knowledge	P-value
	Mean \pm SD	
Marital status		
Single	23.32 \pm 3.58	0.415
Married	22.74 \pm 3.06	
Working system in the bakery		
Morning	22.79 \pm 4.04	0.661
Night	23.11 \pm 2.73	
Years of experience in the bakery		
< 5 years	23.45 \pm 3.47	0.327
5 - 10 years	22.96 \pm 3.08	
> 10 years	22.10 \pm 3.13	

* Means there is statistical significant difference

Table (6): The relation between total score of practice for using safety measures and demographic characteristics of the studied bakeries' workers at Assuit city, 2016. (N=87).

Variables	Score of Practice	P-value
	Mean \pm SD	
Age: (years)		
< 25 years	3.23 \pm 0.65	0.214
25 - 30 years	3.10 \pm 0.54	
> 30 years	2.90 \pm 0.70	
Educational status		
Illiterate/read and write	2.87 \pm 0.78	0.066
Basic education	3.15 \pm 0.55	
Secondary	3.20 \pm 0.55	
Marital status		
Single	3.22 \pm 0.63	0.167
Married	2.98 \pm 0.65	
Working system in the bakery		
Morning	3.06 \pm 0.78	0.916
Night	3.09 \pm 0.56	
Years of experience in the bakery		
< 5 years	3.25 \pm 0.63	0.103
5 - 10 years	3.00 \pm 0.55	
> 10 years	2.85 \pm 0.75	

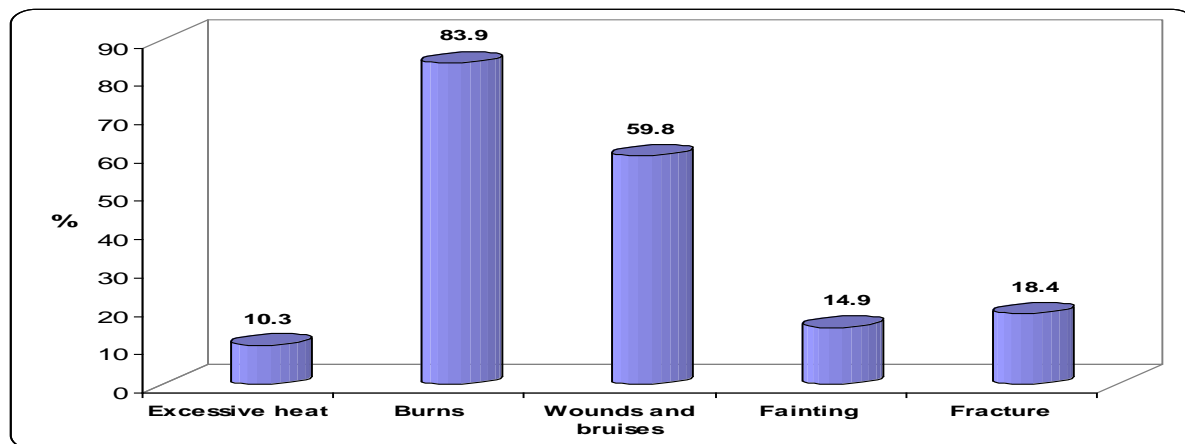


Fig (1): Knowledge of bakeries' workers about injuries at Assuit city, 2016.

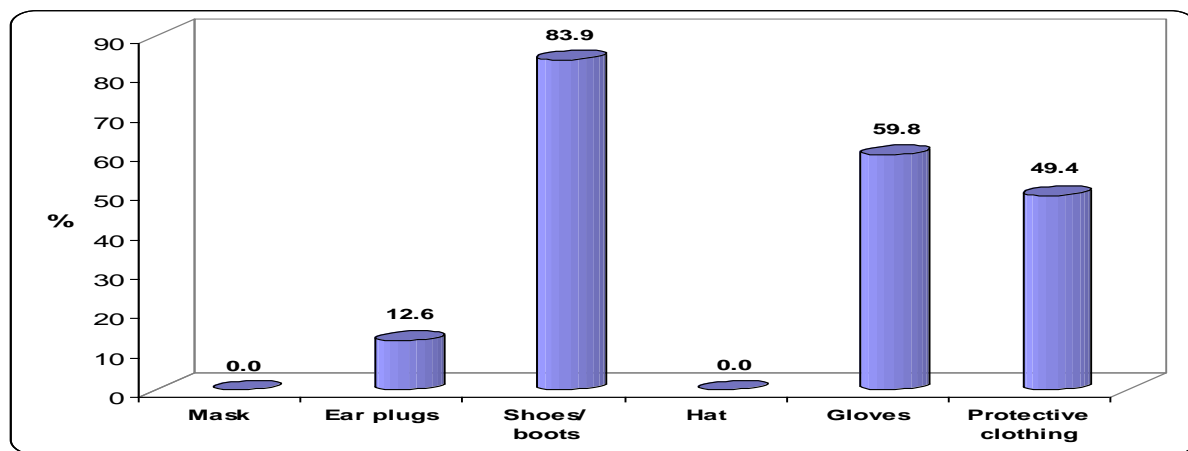


Fig (2): Distribution of studied bakeries' workers regarding to thier knowledge about using personal protective equipment at Assuit city, 2016

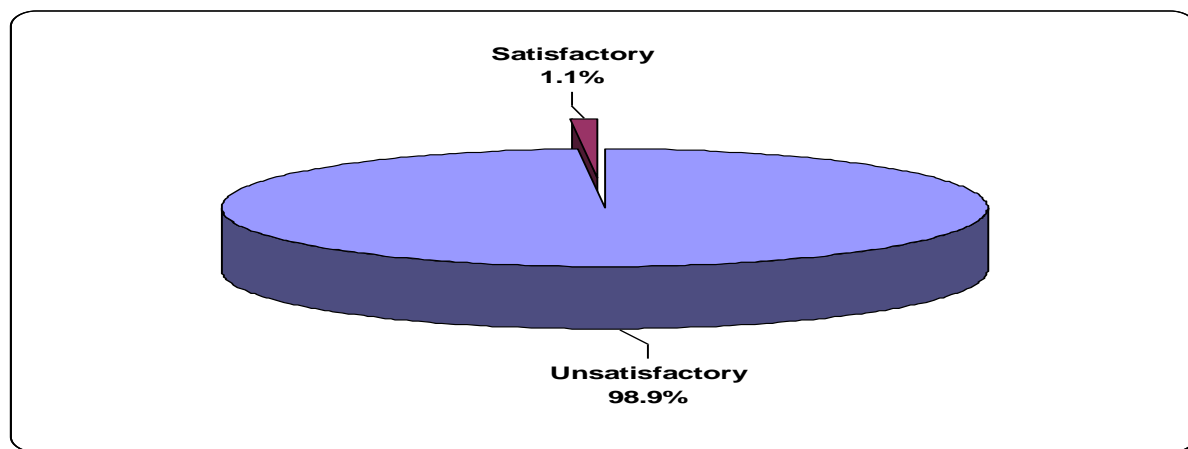


Fig (3): Total knowledge score of bakeries' workers about occupational hazards and safety measures at Assuit city, 2016.

Table (1): Shows demographic characteristics of the studied bakeries workers, it was found that 40.2 % of the studied workers aged < 25 years. In addition, the table shows that 23.0 % had ≥ 10 years of experience in the bakery.

Table (2): Clears knowledge of workers about occupational hazards. It was observed that most of studied workers (89.7%) do not know meaning of occupational health. As well as 26.4% of them stated chemical liquids consider from chemical hazards.

Table (3): Reveals the distribution of studied bakeries' workers regarding to their reporting practice of first aid for excessive heat. It was noticed that 80.5% of workers drink plenty water consider from the first aid for excessive heat. Also the table shows that 11.5% of them put wet blankets on the workers consider from first aid for excessive heat.

Table (4) Shows the observational checklist for using safety measures of bakeries' workers. The study results show only (1.1%) of workers wear ear plugs.

As observed from the table 78.2% of them not using handkerchief.

Table (5): Clears that there is no statistically significantly differences between demographic characteristics of the studied workers and total score of knowledge about occupational hazards and safety measures except educational status $P=(0.001^*)$.

Table (6): reveals that there are no statistically significantly differences between all items of demographic characteristics of studied workers and using safety measures.

Figure (1): Reveals that 10.3% of studied bakeries' workers stated excessive heat consider from these injuries. In addition, this figure shows most (83.9%) of them know burns consider from these injuries.

Figure (2): Shows that 12.6 % of studied workers know earplugs. Also, this figure reveals that majority (83.9%) of them stated shoes / boots from personal protective equipment.

Figure (3): Clears that vast majority (98.9%) of studied workers had unsatisfactory knowledge.

Discussion

Bakeries can be a high risk working environment related to occupational hazards. Historical data suggests that 27,000 workers in the bakeries could potentially be exposed to diseases and injuries in the UK and exposure to flour dust will vary depending on bakery size and apply control preventive measures amongst bakeries. (**Federation of Bakers, 2012**)

Regarding to workers age, the present study showed that more than one fifth of the workers aged from 25-30 years with the range (15.0 – 55.0) years. related to lack of interest of officials to work, which leads to forced labor in a young age because of high prices of goods and living conditions difficult to meet their needs.

The current study supported by **Emmanuel & Sussan, (2014)** who conducted a study in University of Nigeria about Assessment of Baking in a Developing Country: The common Hazards, Health challenges, control measures they reported that the participants age between the rang less than 15 and above 30 years.

The present results in the same line with **Baatjies, (2013)** who conducted a study in University of Cape Town about the occupational risk factors and interventions for baker's allergy and asthma among bakery workers who found that the studied participants aged from 20 to 50 years.

Concerning educational status of the workers, the present results showed that more than one third of them were illiterate A statistical significant differences were observed between workers knowledge with their education $P = (0.001^*)$. This table illustrates that mean score of the studied workers had technical secondary educational level was 24.52 ± 1.95

On the other hand these results disagreed with **Yossif & Abd Elaal, (2011)** who conducted a study in Benha University about prevention of health hazards among workers in the bakery who found that less than one fifth of them were intermediate education.

More over the current study confronted with **Emmanuel & Sussan, (2014)** who conducted a study in University of Nigeria they revealed that more than two third of studied workers were graduated from secondary school and only 4.0% of them were no formal education.

According to experience years in the bakery the current results showed that experience years among workers within the range from 1 year to 30 yrs and there were no a statistical significant difference was observed between years of experience with their knowledge and practice $P = (0.327, 0.103$

respectively). This because when the years of experience were increased the bakeries workers knowledge about occupational hazards and how to control it well be increased.

The current study were similar to **Baatjies, (2013)** conducted a study in University of Cape Town who found that the participants had years of experience in the bakery with the range from 10 m to 25 years.

In addition the present results confronted with **Emmanuel & Sussan, (2014)** they found that more than two fifth of the workers had worked for 5 years or less while only 2.0% of the bakers had worked longer than 15 years. The workers had years of experience in the bakery with the range from 5 m to 15 years.

Regarding to attending training course. The results of the current study showed that slightly more than three quarters of them stated that no training course attending during working in the bakery. Because health and safety responsible not provide training course for bakery workers on how to avoid the risks that occur from work, using self protective devices, and first aid.

The present results are in the same line with **Yossif & Abd Elaal, (2011)** who conducted a study in Benha University who found that less than one fifth of them received training courses about safety practice at emergency situations as how to use fire extinguisher. Moreover, the current study disagreed with **Cohen & Colligan, (2014)**, who conducted a study about Assessing training in health and safety in occupation, Columbia, Parkway Cincinnati. They reported that training is increasing workers knowledge of job hazards, and effecting safe work practices and other positive actions in a wide of work sites. Lack of training is a contributing factor to the hazards.

In addition the present study contracted with **Alexopoulos et al., (2009)** who carried out study about Subjective risk assessment in the Greek and English bakeries. They found that British bakery provided training for workers about safety and health regulations. Workers' training about occupational safety is seen as critical part of human resources management to perform their work efficiently and help them to make the work environment enjoyable and safe for the workers.

As regard to knowledge about meaning of occupational health, the current study clear that most of workers do not know it. In addition more than one fifth of studied workers stated chemical liquids considers from chemical hazards. Because workers not had enough knowledge about occupational hazards occur in the bakeries and safety measures. So the workers need occupational health program about it.

The current study showed that reporting practice of worker's was unsatisfactory. Regarding to first aid for excessive heat. It was noticed that less than one fifth of studied workers didn't know sit or lie down workers in a cool or shady consider from first aid for excessive heat. These results related to there are no first aid facilities and no personal protective equipment provided in all bakeries.

The present results contracted with **Safety Resource Centre, (2010)**, study conducted in Washington, which reported that the bakery workers should instructed in how to avoid health hazards by following recommended safe work place.

Concerning observational checklist for safety measures for workers. The current results clear that majority of bakery workers done personal hygiene. The study results show only (1.1%) of studied workers used ear plugs. Due to the bakery workers not had knowledge about personal protective equipments.

The current study is in the same line with **Yossif & Abd Elaal, (2011)** who conducted a study in Benha University who found that all of the studied workers had poor score of practice in all items of protective device; as use of apron, mask, head cap, except personal hygiene as hand washing before and after completion of working and using handkerchief.

These results disagree with **Emmanuel & Sussan, (2014)** they conducted a study in University of Nigeria found that most of the participants frequently used apron followed by gloves while ear plugs were least worn. Workers are required to maintain good personal hygiene. Facilities are regularly inspected to ensure that equipment and employee comply with health and sanitation regulations.

Regarding to knowledge of the bakery workers about injuries occurs among bakeries workers. The present study found that most of studied workers know burns, wounds and other injuries. Because the working in the bakery is very hard, heavy and there is not enough time for rest. Due to the studied workers work prolonged duration in the bakery so they exposed to many injuries ranging from mild to severe.

These results agreed with **Yossif & Abd Elaal, (2011)** who found that most of studied workers know many injuries as excessive heat, wound and falling during working in the bakery.

According to knowledge of workers about using personal protective equipment among bakeries the present study revealed that majority of them mentioned that shoes / boots. Due to the workers work prolonged time in the bakery so they wear shoes full times to protect themselves from occupational hazards. It was observed that less than one fifth of studied workers know earplugs. Related

to workers don't know personal protective devices that used during the work for protecting them from the hazards.

Conclusion

The current results could be concluded that

The workers had unsatisfactory knowledge about occupational hazard, and safety measures. As well as the workers had unsatisfactory practice about using safety measures of personal protective equipment.

Recommendations

Based on the current results, the following recommendations are suggested:

- Programs of health education should be organized and directed for workers to increase their awareness about occupational hazards and safety measures.
- Conduct regular training courses to workers regarding hazards in bakery and using of personal protective measures.
- Further studies should be conducted about occupational hazards and safety measures for bakery workers.

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