



Occupational Health Problems among Bakery Workers in 10th of Ramadan City in 2018

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ABSTRACT

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Key Words:

bakery workers,
occupational hazards,
heat, noise.

Background: Bakeries can be a very hazardous work site. Occupational health problems at the bakeries may vary from physical, chemical, biological, and psychological health problems. Heat, light, noise, and radiation are the physical health problems that might be encountered at the bakery. **Objective:** This study was carried out to evaluate the occupational health problems among bakery workers and to evaluate the safety measures at the bakery sites. **Method:** A cross-sectional study was conducted on bakeries on the 10th of Ramadan City. A total of 100 bakery workers were randomly selected and interviewed individually, at their work. We assessed the self-recorded health problems of the workers during the last 6 months and occupational health problems among them. In addition, occupational health hazards and precautionary measures taken were assessed. **Results:** Different occupational hazards had disclosed as the following (from the highest to the lowest exposure) among bakery workers: 80.0% for moving stuff while 60.0% had poor positioning during work, followed by 58.0% who were facing excessive heat, then 50.0 % who encountered a hazardous degree of noise. Most bakery sites have very poor ergonomic rules and ventilation. Most bakery workers are exposed to many physical and ergonomic health hazards. Common cold, Headache, and muscle spasms are the most recorded health problems among bakery workers. **Conclusion and Recommendations:** Most bakery workers are exposed to many physical and ergonomic health hazards. Common cold, Headache, and muscle spasms are the most recorded health problems among bakery workers. We suggest further studies to evaluate the degree of the physical and ergonomic hazards at the bakery sites. Besides, bakery workers should be encouraged to be trained on occupational health and safety; how to prevent health problems, accidents and use safety measures, first aids, and PPEs at the bakery sites.

INTRODUCTION

The pivotal determinant of wellness at the workplace is the working environment. Health can be altered dramatically by it. Some bakeries can be hazardous worksites and have occupational exposures that can dramatically affect the physical health of the workers.¹

Occupational health problems at the bakeries may vary from physical, chemical, biological, and psychological health problems. Heat, light, noise, and radiation are the physical health problems that

might be encountered at the bakery. Inhalation of dust, gases, fumes, are among the chemical health hazards, which affect the health of bakery workers. Furthermore, exposure to viruses, bacteria, and parasites can be recorded at the bakery site as biological health hazards. Stress and anxiety can be considered as psychological health problems at the bakery site.¹

Baking flour can be a risk factor in the bakery environment that leads to work-related asthma

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among bakery workers during the baking process. When the susceptible worker inhales the flour dust at the bakery site, this can exacerbate work-related asthma.³ The elevated percentage of the work-related health problems at the bakery site are COPDS; bronchial asthma and emphysema.⁴

Labour work as handling heavy objects, monotonous activities, and poor body positions may lead to work-related musculoskeletal disorders (WMSDs), arthritis and muscle ache among bakery workers. Lack of ergonomic principles and designs at the bakery sites can increase the risk of MSDS.⁵

Dermatitis may be exacerbated by dealing with dough and other baking constituents. The majority of accidents like falls and slipping are escalating from bad housekeeping and wet surfaces. Other accidents in form of falling from a height can be caused by loading and unloading the vehicles and the stores. Furthermore, too much heat from oven exposure can be dangerous, this may lead to cardiovascular problems as fainting and more serious consequences.⁶

We aimed to evaluate the occupational health problems among bakery workers. The objectives of the study were to assess the prevalence of work-related health problems among bakery workers, to identify the health hazards among the bakery workers and to evaluate the safety measures at the bakery sites.

METHOD

A cross-sectional study was conducted among the bakeries on the 10th of Ramadan city. Assuming that the city has 130 sections, in each section there is at least one bakery serving the area, so the total number of bakeries in the 10th of Ramadan city is 140, and the prevalence of the common health problem among them was 72.0 % (1). So the total sample size will be 97 bakeries, using Open EPI (version 2.3) (7), at a power of the test of 80 % and 95% confidence. We randomly chose 6 sections; away from each other, which included 17 bakeries. Each bakery has 5-7 workers; all workers were included in this study to meet the sample size, for a total of 100 bakery workers presented in this study. All data were collected in summer 2018 by the principal investigators. Each participant was informed that he/she had the right to decline to answer any questions and can withdraw from the study at any time.

Participants were interviewed individually face to face, at their work during their working time from 8

Table 1: Socio-demographic data among the studied group.

Characteristics	Bakeries workers (No=100)	
	No	%
Sex		
Male	100	100.0
Education		
Low	30	30.0
Intermediate	47	47.0
High	23	23.0
Age (years old)		
20- years old	46	46.0
30- years old	36	36.0
40-50 years old	18	18.0
Working Experiences in Years		
<3 years	12	12.0
3-5 years	8	8.0
>5years	80	80.0
Working hours		
6-12 hours/day	2	2.0
>12 hours/day	98	98.0

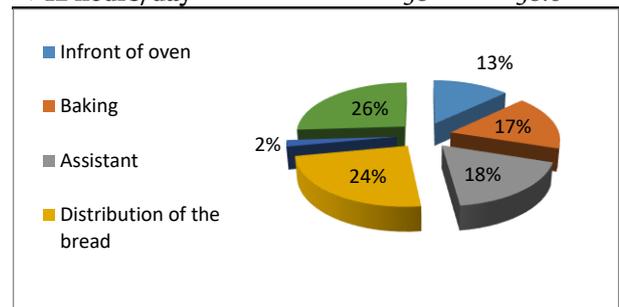


Figure 1: Tasks distribution among bakery workers.

a.m. to 3 p.m. Each interview took about 15 minutes; respondents were appreciated for their time and help. Based on the study aim, we assessed the following: Demographic characteristics of workers age, educational level, working hours, types of work, workers task inside the bakery; Self-recorded health problems of the workers during the last 6 months which include respiratory problems, musculoskeletal problems, vision problems, varicose veins, headache, and teeth ache; Occupational health problems among the bakeries as stroke, burn, wound or trauma, reported as never, sometimes, or regular to occur. Furthermore, the operational definition for "sometimes" were used when the event happen once per shift, while "regular" more than twice per shift, "never" was not happening at all; In addition, occupational health hazards as excessive heat, falling, moving things, machines,

Table 2: Occupational hazards and Health problems distribution among bakery workers.

Occupational hazards	Bakery workers (No= 100)		
	Regular No (%)	Sometimes No (%)	Never No (%)
Excessive heat	58(58.0)	1(1.0)	41(41.0)
Noise	50 (50.0)	9 (9.0)	41(41.0)
Falls	10 (10.0)	10 (10.0)	80 (80.0)
Wounds/trauma	22 (22.0)	20 (20.0)	58 (58.0)
Moving stuff	80 (80.0)	10 (10.0)	10 (10)
Lifting heavy objects	20 (20.0)	21(21.0)	59 (59.0)
Machine	8 (8.0)	33 (33.)	59 (59.0)
Poor position	60 (60.0)	40 (40.0)	0 (0.0)
Occupational Health Problems			
Stroke	5 (5.0)	10 (10.0)	85 (85.0)
Burns	20 (20.0)	60 (60.0)	20 (20.0)

Table 3: The condition of the environment in the bakeries.

Items	The bakeries (No=17)	
	No	%
General Cleanliness		
Bad conditions of Walls and floor	10	58.8
Bad conditions of Equipment's	6	35.3
The inappropriate environment around bakeries	6	35.3
Bad Housekeeping	15	88.2
Slippery floors	13	76.5
Ventilation		
Adequate ventilation openings	14	82.3
Windows opened at all time	14	82.3
Adequacy of fans	15	88.2
Fans opened all the time	15	88.2
Lighting		
Adequate lightening	16	94.1
Health measures		
Presence of first aid box	15	88.2
Fire Protection		
Presence Fire extinguishers	15	88.2

noise, lifting heavy things, and poor position were reported as never, sometimes or regular to occur.

Together with an observational checklist developed to evaluate (a) Bakeries' environment as general cleanliness, ventilation and lighting, health measure, and fire protection. (b) Safety measures as personal hygiene and protective device and are scored as good (present and in good quality), average (present but average quality), and poor (present in poor quality or/not present at all).

The analysis was performed using SPSS Statistics 23.0 (IBM, 2015). (7)Data were summarized using descriptive statistics. The χ^2 test to compare percentages and when one cell was less than 5, Fisher's exact was used.

RESULTS

In table (1): In this study, all workers in bakeries in the 10th of Ramadan city were males and 47.0% have an intermediate level of education, with an average age of 32.5 ± 7.4 years old. Working experiences (in years) were 14.7 ± 7.8 while average working hours were 16.7 ± 5.2 .

In figure (1), bakery workers were distributed as follows: 26 % do all the bakery tasks, 24 % distribute of the bread, 18 % work as assistants, 17 % baking, and 12 % work in front of the oven.

In Table (2) different occupational hazards had disclosed as the following (from the highest to the lowest exposure) among bakery workers: 80.0% for moving stuff while 60.0% had poor positioning during work, followed by 58.0% who were facing excessive heat, then 50.0 % who encountered a hazardous degree of noise.

Furthermore (10.0, 22.0, and 20.0% respectively) represented as regular exposures to falls, wounds or trauma, and lifting heavy objects among the bakery workers. As regards the occupational health problems: 60.0% were sometimes exposed to burns while 20.0 % were defined as regularly exposed to burns. Table (3) shows the level of environmental conditions. The general cleanliness was mainly poor as regards bad housekeeping (88.2%) and slippery floors (76.5%). In addition, all ventilation

Table 4: Distribution of safety measures among bakeries.

Items	The bakeries (No=17)	
	No	%
PPEs (Personal protective measures)		
Apron Presence	1	5.9
Head cap presence	3	17.6
Head cap Use	2	11.8
Personal hygiene measures		
Hand washing before the start of work	1	5.9
Nails, hair cleanliness	3	17.6

parameters were poor. However, good the bakeries' environment 94.1% was checked for proper lighting, 88.2% for the first aid box as a health measure and 88.2% of bakeries had good fire extinguishers.

In table (4): All bakery workers had poor percentages in all items as regards usage of protective devices and personal hygiene. In figure (2) the self-reported health problems and health hazards inside the bakeries were reported by the workers during the last 6 months which were as follow: headache (98.0%), followed by 88.0% of bakery workers who had a common cold and was statistically higher due to physical hazards in the bakery (heat exposure) and poor ventilation (table 5), while 85.0% of workers had a muscle spasm. Moreover, the prevalence of eye inflammation and DVT was statistically higher among workers complaining about physical hazards.

DISCUSSION

In this study, all the studied workers in bakeries in the 10th of Ramadan city were males and 47.0% had an intermediate level of education which was consistent with other study⁸ that recorded the lowest percentage of the bakery workers who had a higher degree of education, while the highest percentage of them had a lower degree of education. In addition, this may be explained by that the highly educated workers seek a better career and working environment. On the other hand, this was not in line with a study¹, which had reported higher percentages of workers with a higher level of education.

The study participants have an average age of 32.5 ± 7.4 years old and working experiences (in years) of 14.7± 7.8 while the average working hours were 16.7± 5.2. Moreover, the work tasks carried out by

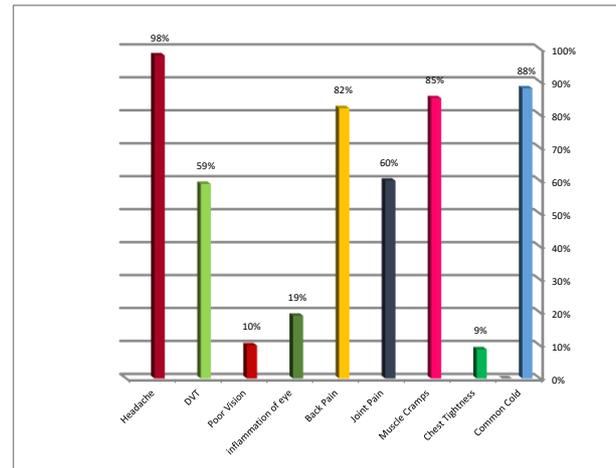


Figure 2: Self-reported health problems and health hazards among the studied group.

bakery workers were distributed as follows: 26 % do all the bakery tasks, 24 % distribute the bread, 18 % work as assistants, 17 % baking, and 12 % work in front of the oven. This is explained by fewer numbers who want to stand in front of the oven, while others just shift around other tasks due to a lack of the number of workers that help.

Furthermore, our study revealed that different occupational hazards had disclosed as the following (from the highest to the lowest exposure) among bakery workers: 80.0% for moving stuff while 60.0% had poor positioning during work, followed by 58.0% who were facing excessive heat, then 50.0 % who encountered a hazardous degree of noise. Furthermore (10.0, 22.0, and 20.0% respectively) represented as regular exposures to falls, wounds or trauma, and lifting heavy objects among the bakery workers. As regards the occupational health problems: 60.0% were sometimes exposed to burns while 20.0 % were defined as regularly exposed to burns. This was in agreement with (9)who recorded that, the prevalence of handling heavy loads, repetitiveness, high temperatures, and noise as the highest work-related health hazards among the bakery workers. However,(1)reported that the prevalence of heat and noise was the highest among the bakery workers.

In addition, the general cleanliness was mainly poor as regards bad housekeeping (88.2%) and slippery floors (76.5%). In addition, all ventilation parameters were poor. However, good components of the bakeries' environment as proper lighting was encountered in 94.1%, 88.2% reported the presence of the first aid box as a health measure and 88.2% of bakeries had good fire extinguishers. This was in line with a study¹ which found that general cleanliness, ventilation, and first aid measures and

Table 5: Relation between self-reported health problems of the workers during the last six months and hazards inside the bakery

Health Problems		Health Hazards encountered among the workers (No=100)			
		Physical (No=59)	Ergonomic (Mechanical) (No=41)	Chi-square	P-value
		No (%)	No (%)		
Respiratory	Common Cold	59 (100.0)	29 (70.7)	FE test	0.001****
	Chest tightness	4 (6.8)	4 (9.8)	FE test	0.7
MSD	MS cramps	48 (81.4)	37 (90.2)	1.5	0.2
	Joints pain	39 (66.1)	21 (51.2)	2.2	0.1
	Back pain	45 (76.3)	37 (90.2)	3.2	0.07
Eye	inflammation	19 (32.2)	0 (0.0)	FE test	0.000****
	Blurring of vision	6 (10.2)	4 (9.8)	FE test	1.0
LL	DVT	42 (71.2)	17 (41.5)	8.8	0.003**
others	Headache	57 (96.6)	41 (100.0)	FE test	0.5

FE test: Fisher Exact test, $P < 0.000$ ****, $P < 0.00$ **, $P < 0.05$ *

protective equipment were poor, together with slippery floors, while in contrast to our results they found the good bakeries environment showed less than 30.0 % for proper lighting and only 40.0 % of bakeries had available fire extinguishers which are worse than our studied bakeries. In addition, this can be explained as supplying fresh air through proper ventilation in the workrooms was the key to a good bakery environment.

Moreover, all bakery workers had poor percentages in all items as regards the usage of protective devices and personal hygiene. This was following, (1), who reported poor scores among bakery workers regarding the use of protective equipment and personal hygiene.

Also, the self-reported health problems and health hazards inside the bakeries were reported by the workers during the last six months which were as follow: headache (98.0%) which most properly was due to poor ventilation, followed by 88.0% of bakery workers who had a common cold and was statistically higher due to physical hazards in the bakery (heat exposure), while 85.0% of workers had a muscle spasm. Moreover, the prevalence of eye inflammation and DVT was statistically higher among workers complaining about physical hazards. Our results were consistent with (10) who studied the relation between occupational hazards and health problems among the bakery workers and found that the higher percentage of respiratory health problems were attributed to excess heat exposure. Also, this was in line with a study⁵ which detected low back pain and severe morbidities caused by prolonged working durations among the

workers, due to prolonged exposure to the hazards at the bakery.

CONCLUSION AND RECOMMENDATIONS

Most bakery sites have very poor ergonomic rules and ventilation. Most bakery workers are exposed to many physical and ergonomic health hazards. Common cold, Headache, and muscle spasms are the most recorded health problems among bakery workers. Moreover, these health problems, common cold, eye inflammation, and DVT are significantly prevalent due to heat exposure and bad ventilation, as a physical health hazard at the bakery site. In addition, most of them were exposed to burns either regular or sometimes according to the job task they handled.

We suggest further studies to evaluate the degree of the physical and ergonomic hazards at the bakery sites. Besides, bakery workers should be encouraged to occupational health training; on how to prevent health problems, accidents and use safety measures, first aids, and PPEs at the bakery sites. Also, regular checking for the continuous availability and validity of PPEs and first aid measures at the bakeries should be done by the local health authorities.

Ethical consideration

The procedures followed were following the ethical standards of the responsible committee on human experimentation and was approved by the IRB (Institutional Review Board)

Limitations of the study

The hardness in getting in touch with the bakery workers was treated by the positive feedback, given to them about their health and safety at the worksite.

In addition, the bad housekeeping renders us from an easy walk through a survey during fieldwork.

Declaration of Conflicting Interests

There were no conflicts of interest regarding our research.

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