

Occupational Health Hazards among Workers at Abo Mashhour Brick Factory

Asmaa Sobieh Saeed¹, Mahbouba Sobhy AbdEL-Aziz² and Basma Mohammed AbdEL-Rahman³

(1) Nursing Supervisor at Family Health Center in Touhk, Egypt, (2) Professor of Community Health Nursing Faculty of Nursing- Benha University, Egypt and (3) Lecturer of Community Health Nursing Faculty of Nursing - Benha University.

Abstract:

Background: Brick manufacturing had a variety of biological, chemical, physical and psychological hazards which may lead to verified health problems as respiratory disorders, accidents, muscle and hearing disorders to workers during work. **Aim of study:** Was to assess the occupational health hazards among workers at Abo Mashhour Brick Factory in Benha City. **Research design:** A descriptive research design was utilized to conduct this study. **Setting:** This study was carried out at Abo Mashhour Brick Factory at Warwara Village in Benha City. **Sampling:** Convenient sample of workers who worked in the previously mentioned setting and included 120 workers. **Tools:** Two tools were used for data collection. I) An interviewing questionnaire consisted of three parts: A) Socio demographic characteristics of workers and working history. b) Health problems among workers during the last six months. c) Workers knowledge regarding occupational hazards. II) Observational checklist to observe workers practices regarding occupational health hazards and environment at the Brick Factory. **Results:** 23.3% of workers had tingling in the extremities, 40.0% had lower back pain and 30.0% had hearing impairment. 67.5% of them had average knowledge level about occupational health hazards and 77.5% of the workers had unsatisfactory total practices level **Conclusion:** There was a highly statistically significant relation between workers total knowledge level and total practices level. **Recommendation:** Continuous health education program should be provided for workers at Brick Factory to improve their knowledge and practices regarding occupational health hazards safety measures, emergency, and first-aid measures.

Key words: Brick Factory, Occupational Health Hazards, Workers.

Introduction

Occupational Health (OH) deals with all aspect of health and safety, prevents workers from being harmed by work or becoming ill by taking the right precautions and providing a satisfactory working environment and has a strong focus on primary prevention of work hazards. OH and safety is the field of public health that studies trends in illnesses and injuries in the worker population and proposes and implements strategies and regulations to prevent workers in the work sites (Correl, 2019).

Occupational health hazards are the risks to the health of workers which refer to the process or situation that cause accidents or disease at workplace. Occupational health hazards are brought by unsafe work conditions and unsafe work behaviors. Workplace hazards or injuries are preventable with the use of appropriate occupational safety and health services (Degavi et al., 2021).

According to International Labor Organization (ILO, (2020) estimates 2.3 million women and men around the world succumb to work-related accidents or diseases every year, this corresponds to over 6000

deaths every single day. Worldwide, there are around 340 million occupational accidents and 160 million victims of work-related illnesses annually.

Brick manufacturing is an old and important industry in Egypt involves three main steps: clay shaping with water (molding), drying with solar energy and firing with fuel (baking). Four main activities take place in the brick factory, these are, preparing mud and laying brick, carrying raw bricks to kiln, working inside the furnace and carrying out cooked brick and work inside the furnace (**Shakir & Mohammed, (2018)**).

Major hazards posed to brick kiln workers are chemical, physical, mechanical and psychological. Chemical hazards include exposure to brick dust, silica, carbon monoxide (CO), Sulfur Dioxide (SO₂), fluoride compounds and Nitrogen Oxides (NOX). The workers are also exposed to burnt mud dust mixed with coal and cooked brick. Physical hazards include heat stress and excessive exposure to noise while working in the furnace. Mechanical hazards are lifting heavy weights, improper posture and repetitive movements that can lead to chronic musculoskeletal problems and psychological hazards are high levels of stress, low self-esteem and abuse at work (**Chukwu et al., 2020**).

Occupational health problems which facing to workers at work include cuts, accidents, musculoskeletal disease, respiratory disease, hearing loss, stress related disorders, vision disorder, touching or inhalation of unsafe substance and communicable disease and others. So workers have raise to the standard of professional education and training to stay fit, reduce stress, set up work area properly and use the personal protective equipment to prevent health problems (**Smits et al., 2018**).

Community Health Nurse (CHN) plays a major role in protecting, preventing and improving the health for workers in the brick factory. CHN is one that should focus on health promotion, illness and injury prevention, and the protection of workers from occupational and environmental hazards. Also CHN develop intervention plan to address the health, safety and quality of life needs of workers. In addition to this CHN can prevent, diagnose and treat the occupational and environmental diseases and injuries that occur in brick factory all times and provide health care to workers who may not have access to, or be able to afford, medical services (**Noorian et al., 2017**).

Significance of the study

According to the globe estimation about 2.9 billion workers across the globe are exposed to hazardous risks at the work place. Workers exposed to the occupational risk factors lost about 22 million years of health life. By far the main cause of years of healthy life loss (measured in Disability-Adjusted Life Years(DALYS)), with in occupational diseases, was international injuries with 48% of the burden. This was followed by hearing loss due to occupational noise(19%) and chronic obstructive pulmonary diseasedue to occupational agent (17%) (**World Health Organization (WHO), 2018**).

Aim of the study

This study aimed to assess the occupational health hazards among workers at Abo Mashhour Brick Factory.

Research Questions

- 1-What are the occupational health problems affecting workers ?
- 21-What is the workers knowledge regarding occupational health hazards?
- 3-What are the workers' practices regarding occupational health hazards?
- 4-Is there a relation between worker's knowledge and practices regarding

Occupational Health Hazards among Workers at Abo Mashhour Brick Factory

occupational health hazards in Abo Mashhour Brick Factory?

Subject and methods

Research design:

A descriptive research design was utilized to conduct this study.

Setting:

This study was conducted at Abo Mashhour Brick Factory which is affiliated at Benha City, Qaliubiya Governate.

Sampling:

Convenient sample of workers who worked in the previously mentioned setting was taken. The total number of workers were 120 in year 2021. The factory consists of 6 sections as the following:

Tools of data collection:

Data were collected by using two tools:

The first tool: Structured interview questionnaire

It was designed by the investigator and revised by supervisor staff based on reviewing related literatures and it was written in simple clear Arabic language and consisted of three parts to assess the following:-

The first Part:- A) It was concerned with socio demographic characteristics of workers which included seven closed ended questions about age, gender, level of education, marital status, residence, monthly income and number of family members.

B) It was concerned with working history of workers which included five closed ended questions as number of working hours, work nature, years of experience, training courses and facilities provided by the factory .

Part II: It was designed to assess health problems among Brick Factory workers during the last 6 months resulting from occupational hazards about respiratory system problem, gastrointestinal problems, nervous system

problems, musculo skeletal system problems, eye problems, ear problems and skin problems.

Part III: It was concerned with the studied workers knowledge about occupational health hazards which included nine closed ended questions (multiple choice) covering areas of meaning of occupational hazards, types of occupational hazards, physical hazards, mechanical hazards, chemical hazards, psychological hazards, hazards related to nature of work, hazards related to work environment and prevention of occupational hazards.

Scoring system

Knowledge score for each answer was given as follows: (2) score for correct and complete answer, (1)score for correct and in complete answer, (0) score for don't know.

Total score of knowledge =18.

The total knowledge score was considered good if the score >75% (14 score), while considered average if it equals 50-75% (9-14 score), and considered poor if it is < 50% (<9 score).

The second tool: An observational checklist. It was consisted of two parts.

Part I: A) It was used to observe workers practices about occupational hazards on using the personal protective equipment, body mechanics during stand up, body mechanics during sitting, body mechanics during lifting or pushing the object.

B) It was concerned with observation of workers practices of first aid as follows:- First aid of extreme heat, First aid of burn, First aid of fracture

Scoring system

The scoring system for the workers practices was scored as follows: (1)score for done, (0)score for not done.

The total practice score = 44

The total practices score were considered satisfactory if the score $\geq 60\%$ (≥ 26 score) and

considered unsatisfactory if the score < 60% (<26 score).

The scoring system for the for work environment was scored as follows: (1)score for available and (0)score for not available.

Content validity of the tools:

The tools were reviewed for comprehensiveness, appropriateness and legibility by three experts of Faculty of Nursing Staff from the Community Health Nursing Specialties. The experts ascertained the face and content validity of the tools.

Reliability of the tools:

The reliability of the tools was done by Cornbrash's Alpha coefficient test which revealed that each of the two tools consisted of relatively homogeneous items as indicated by the moderate to high reliability of each tool. The internal consistency of knowledge was 0.750 and practice was 0.731.

Ethical considerations:

Permission has been obtained orally from each worker before conducting the interview and given a brief orientation to the purpose of the study. They were also reassured that all information gathered would be confidential and used only for the purpose of the study. The workers had right to withdraw from the study at any time without given any reasons. No names were required on the forms to ensure anonymity and confidentiality.

Pilot study:

A pilot study was conducted on 10% of the total sample (12 workers) to test the content, applicability and simplicity of the tool using the interviewing questionnaires and observational check list. Based on the pilot study. The tools were organized. Organization of the tool included rephrasing, rearrangement of some questions. The pilot study was included in the study as no modifications were done.

Field of work:

The actual field work was carried out over a period of 4 months from the beginning of September to the end December 2021. The study was conducted by the investigator for the studied sample in the selected sittings Brick Factory. Data were collected by interviewing the workers in the previously mentioned setting during the break time at separated periods for every department in the Brick Factory. The investigator was available at the study setting from 9 am to 4 pm. The investigator explained the purpose and importance of the study to the workers and obtained their consent. the investigator visited the Brick Factory for 2 day/ week(Sunday and Monday) The average number of interviewed workers was between 3-4 worker's / day depending on their response to the interviewer, the investigator collected data from the workers and observe the workers practices and filled the observational checklist, each interviewed workers takes about 30-40 minutes to collect the needed data depending upon workers understanding and response.

Statistical analysis:

Computerized data entry and statistical analysis were fulfilled using Statistical Package for Social Science (SPSS) version 21. Descriptive statistics were applied frequency, percentage for qualitative data and Chi-square was used mean and standard deviation for qualitative data.

Statistical significance was considered as follows:

- Highly significant result when p-value <0.001.
- Significant result when p-value <0.05.
- Not-significant result when p-value >0.05.

Occupational Health Hazards among Workers at Abo Mashhour Brick Factory

Results:

Table (1): Shows that 35.0% of workers aged from 20 to less than 30 with Mean age 34.33 ± 8.92 years, while all of workers were males and 40.0% of them read and write. Regarding marital status 64.2% of them were married, 85.0% of the workers were from rural areas. Also 69.2% of workers didn't have enough monthly income and 46.7% of family members were less than 3 members.

Table (2): Shows that 19.2% of the workers had Sinusitis, 16.7% had Gastroenteritis, 15.8% of them had nausea, 33.3% of them didn't have nervous system problems, while 23.3% had tingling in the extremities, 21.7% had difficulty in heat sensation, 40% had back pain, 24.2% had sprains and bruises 2 3.3% had eye inflammation, while 18.3% of workers didn't have eye problem 36.7% had ear ache, 31.6% of them had dry skin and 23.3% had skin sensitivity.

Figure (1): Illustrates that 20% of the workers had poor total knowledge level, while 12.5% of them had good total knowledge level and

67.5% of them had average knowledge level about occupational health hazards.

Table (3): Shows that 37.5%, of the workers had satisfactory total practice level regarding first aid for burn, 26.6% of them had satisfactory total practice regarding to first aid of heat stress, 22.5% of them had satisfactory total practice regarding to body mechanics during stand-up, body mechanics during lifting an object, 21.6% of them had satisfactory total practice regarding to first aid of fracture, 19.1% of them had satisfactory total practice regarding to using personal protective equipment and 18.3% of them had satisfactory total practice regarding to body mechanics during sitting

Figure (2): Shows that 77.5% of the workers had unsatisfactory total practices level and 22.5% of them had satisfactory total practice level regarding to occupational health hazards in brick factory

Table (4): Shows that, there was a highly statistically significant relation between total knowledge level and total practices level

Table (1): Frequency distribution of workers regarding to their socio demographic characteristics (n=120).

Socio demographic characteristics	No.	%
Age in years		
<20	4	3.3
20<30	42	35.0
30<40	40	33.3
≥40	34	28.3
Min –Max	18-57	
Mean ± SD	34.33±8.92	
Gender		
Male	120	100.0
Level of education		
Don't read and write	45	37.5
Read and write	48	40.0
Basic education	24	20.0
Secondary education	3	2.5
Marital status		
Married	77	64.2
Single	20	16.7
Divorced	15	12.5
Widowed	8	6.7
Residence		
Rural	102	85.0
Urban	18	15.0
Monthly income		
Enough	37	30.8
Not enough	83	69.2
Number of family members		
>3 members	35	29.2
<3 members	56	46.7
3-5 members	29	24.2

Occupational Health Hazards among Workers at Abo Mashhour Brick Factory

Table (2): Frequency distribution of health problems among workers during the last six months (n= 120).

Health problem	No.	%
Respiratory problems		
Nasal allergy	11	9.1
Sinusitis	23	19.2
Enlarged tonsils	13	10.8
Asthma	14	11.7
Dry cough	17	14.1
productive cough	14	11.7
Breathing difficulties	8	6.7
Bronchitis	12	10.0
Not present	9	7.5
Gastrointestinal problems		
Gastritis	17	14.2
Anorexia	15	12.5
Nausea	19	15.8
Colon disorders	15	12.5
Constipation	18	15.0
Vomiting	6	5.0
Gastroenteritis	20	16.7
Nothing	9	7.5
Nervous system problems		
Difficulty in heat sensation	26	21.7
Change in the ability to sense movement	17	14.1
Tingling in the extremities	28	23.3
Shivering	9	7.6
Not present	40	33.3
Musculo skeletal problems		
Fracture	11	9.2
lower back pain	48	40.0
Sprains and bruises	29	24.2
Ligamentitis	7	5.8
Nerve and muscle injuries	9	7.5
Neck spasm	9	7.5
Nothing	7	5.8
Eye problems		
Eye inflammation	28	23.3
Irritation of the membranes of the eyes	18	15.0
Eye sensitivity	20	16.6
Nearsightedness	10	8.3
Farsightedness	6	5.0
Having double vision	2	1.7
low vision	15	12.5
Nothing	22	18.3

Ear problems		
Otitis media	15	12.5
Earache	44	36.7
Hearing impairment	36	30
Hearing loss	9	7.5
Nothing	16	13.3
Skin problems		
Dry skin	38	31.6
Burning sensation in the skin	9	7.5
Skin infections	25	20.8
Skin burns	11	9.2
Skin sensitivity	28	23.3
Nothing	10	8.3

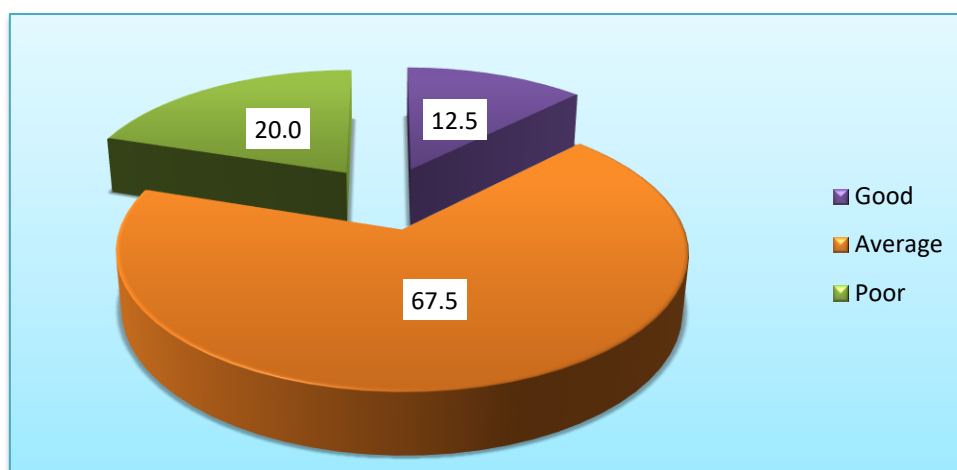


Figure (1): Percentage distribution of studied workers regarding to their total knowledge level about occupational hazards in Brick Factory (n=120).

Table (3): Frequency distribution of workers regarding their total practices (n=120).

Total practices level	Satisfactory		Unsatisfactory	
	No.	%	No.	%
Personal protective equipment	23	19.1	97	80.8
Body mechanics during stand-up	27	22.5	93	77.5
Body mechanics during sitting	22	18.3	98	81.6
Body mechanics during lifting or pushing an object	27	22.5	93	77.5
First aid of extreme heat	32	26.6	88	73.3
First aid of burn	45	37.5	75	62.5
First aid of fracture	26	21.6	94	78.3

Occupational Health Hazards among Workers at Abo Mashhour Brick Factory

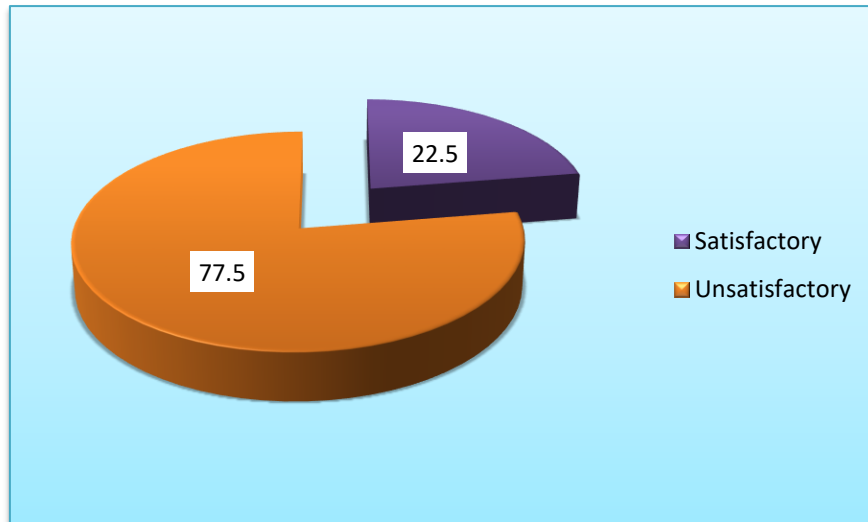


Figure (2): Percentage distribution of workers regarding to their total practices level (n=120).

Table (4): Relation between total knowledge levels of the workers and their total practices levels (n=120).

Total knowledge level	Total practice level				X ²	p-value
	Unsatisfactory (n=93)		Satisfactory (n=27)			
	No	%	No	%		
Poor (n=24)	20	21.5	4	14.8	49.65	0.000**
Average (n=81)	72	77.4	9	33.3		
Good (n=15)	1	1.1	14	51.9		

Discussion

Brick manufacturing involves three main steps: Clay shaping with water (molding), drying with solar energy and firing with fuel (baking). Workers at brick kiln may be involved in carrying the clay dust and bricks, molding or baking. Many industrial hazards are associated with brick manufacturing beyond that of brick dust exposure. The main risks posed to workers involve chemical, physical, and physiological hazards. The main physical hazard associated with brick formation, based on working conditions and hours on the job, is heat stress. Also physiological hazards include concerns in

ergonomics, heavy work load transportation, postural issues and repetitive movements are prevalent among workers and lead to musculoskeletal disorders (Thygerson et al., 2019)

Regarding to socio demographic characteristics of the workers, the present study revealed that more than one third of workers aged from 20 to less than 30 years with mean age 34.33 ± 8.92 . This finding agreed with Tusher et al. (2018), who performed a study about “Health effects of brick kiln operations: a study on largest brick kiln cluster in Bangladesh.” (n=173) and found that more than half (55%) of the workers age ranged

from 20 to 40 years old with the mean age 30.6 ± 10.36 . This might be due to this age represent the label force for the society.

Regarding to gender of the studied workers, the present study revealed that all of the studied workers were male. This finding agreed with **Jain et al. (2018)**, who performed a study of "Risk factors for musculoskeletal disorders in brick workers of Rajasthan" (n=170) and found that 80% of studied workers were males, also in agreed with **Caffaro et al. (2018)**, who conducted a study of "Comprehension rates of safety pictorials affixed to Brick factory", (n=220) and reported that (95%) of the studied sample were males. This might be due to hard work of the Brick Manufacturing

Regarding to level of education and marital status, the present study revealed that two fifths of workers read and write and more than three fifths of workers were married. These findings agreed with **Pandey & vats (2016)**, who performed a study about "Bronchial asthma among brick industry workers in Chain", (n= 110) and reported that (40%) of the workers read and write, and (74%) of workers were married. Also agreed with **Baletic (2018)**, who performed a study about "Chronic laryngitis in the brick industry in Emirate", (n= 150) and found that (%48) of workers had a secondary education, and (80%) were married. This might be due to the majority of them comes from rural area and turn to work in early age without regard to education.

Regarding to residence, the present study revealed that the majority of workers were from rural areas. This finding agreed with **Inbaraj et al., (2013)**, who performed a study about "Prevalence of musculoskeletal disorders among brick kiln workers in rural Southern India" (n=192) and reported that (95%) of studied workers were from rural areas. This might be due to the Brick Factory

presented at warwara village which is a rural area

Concerning monthly income at Brick Factory, the present study revealed that more than two thirds of workers monthly income was not enough (table1), This finding agreed with **Ghally (2016)**, who performed a study about " Occupational health hazards among flax factories workers in Shubra Meles Village ", (n=100) and mentioned that (80%) of the studied workers monthly income wasn't enough for their living. This might be due to increased demand of daily life.

The present study revealed that less than one fifth of them had sinusitis, about more than tenth of them had dry cough, more than tenth of them had asthma and productive cough and tenth of them had bronchitis.. These findings agreed with **Awan (2011)**, who performed a study about "Occupational health and safety in brick factory in Pakistan " (n=173) and found that (17%) of workers complained of breathing difficulties, (64%) of workers complained of moist cough, (40%) of bronchitis and (41%) irritation of the membranes of the mouth. This might be due to the workers continuously exposed to dust and didn't use respiratory mask during work leading to breathing difficulties cough, bronchitis and sinusitis.

Regarding to gastrointestinal problems, the present study revealed that more than tenth of workers had gastroenteritis , nausea, anorexia, , gastritis and constipation. This finding agreed with **Brauer et al. (2018)**, who performed a study about "No consistent risk factor pattern for symptoms related to the sick building syndrome in Israel: a prospective population study. International occupational and environmental health" (n=273)and found that (34%) complained of anorexia and constipation, and (40%) complained of gastritis, nausea and epigastric pain. .This might be due to workers exposed to organic

Occupational Health Hazards among Workers at Abo Mashhour Brick Factory

and in organic material during brick manufacturing..

Regarding to nervous system problem the present study revealed that more than one fifth of workers had tingling in the extremities and had difficulty in heat sensation. This finding agreed with **Ali (2017)**, who performed a study about “Occupational stress in brick industry with special reference to workers in Maharashtra, India” (n=220)who found that (24.7%) of studied sample had tingling in the extremities. This might be due to increased work load, exposure during exposure to extreme heat during burning

Regarding to musculoskeletal problems, the present study revealed that two fifths of workers had lower back pain, less than one quarter had sprains and bruises and minority of them had neck spasm. These finding agreed with **Joshi et al. (2018)**, who performed a study about “Work related injuries and musculoskeletal disorders among workers in the brick kilns of Nepal”, (n=210) and found that (55%) complained of pain in the back, (40.3%) complained of bruises and (34%) complained of muscle spasm. This might be due to the difficult nature and type of work in the factory for long periods of time leads to musculoskeletal problems.

Regarding to eye problems, the present study revealed that more than one fifth of workers complain of inflammation of the eye, about more than tenth of workers complain irritation of the membrane of the eye and eye sensitivity. These finding agreed with **Spear (2016)**, who performed a Study about "Ergonomics, and occupational health and safety in the brick industry in Sweden ",(n=340) and found that (42%) of workers complain of inflammation of the eye, (45%) of workers complain sudden eye pain and irritation of eye. This might be due to all workers are exposed to dust and sunlight long periods of time during the working period

leading to inflammation of the eye, irritation and heavy tears.

Regarding to ears problems, the present study revealed that more than one third of workers complain of ear ache, and less than one third of them complain of hearing impairment. These finding agreed with **Tucker et al. (2018)**, who performed a study about “Prevalence of auditory and vestibular symptoms in workers with auditory complaints exposed to occupational noise in Mansoura university in Egypt”, (n=680), who found that (36%) of workers complain of pain in the ears, and (22%) of them complain irritation and need for itching. This might be due to high sound of machine and workers didn't use ear muff during work.

Regarding to skin problems, the present study revealed that less than one third of workers complain from dry skin, one fifth of them had skin infection and less than one quarter complained of skin sensitivity. These finding disagreed with **Euro (2019)**, who performed a study about "Causes and circumstances of accidents at work in European" (n=140) who found that(40%) of workers complained from inflammation of the skin (62%) of workers complained of dry skin. Also agreed with **Akter et al., (2016)**, who performed a study about “Respiratory affection, alterations of some oxidative stress and autoimmune biomarkers among workers exposed to silica dust with and without silicosis in one of the factories for refractories in Alexandria, Egypt” who reported that workers”(n=290) who found that 72% of workers exposed to hearing loss, eye problems, high blood pressure, respiratory damage resulting from dust, thermal stress from high temperature and occupational traumatic injuries including amputations, fractures, laceration, and death. This might be due to the workers were exposed to dusts, chemicals and extreme heat during work.

The present study revealed that slightly more than two thirds of workers had average total knowledge level regarding occupational health hazards. This finding disagreed with **Sunny et al. (2020)**, who performed a study about "Occupational risk assessment and selected morbidities among cement brick unit workers in a rural area of Bangalore District, India, (n=311), who reported that (51%) of workers had good knowledge regarding occupational health hazards and preventive measures. This might be attributed to their longer years of experience and information acquired from safety personnel and work friends.

Regarding to total practices regarding using personal protective equipment, the present study revealed that the majority of workers had unsatisfactory practice regarding using personal protective equipment. This finding agreed with **Topuz et al. (2018)**, who performed a study about " Integration of environmental and human health risk assessment for industries using hazardous materials in Copenhagen ", and found that the study participants had unsatisfactory practice related to using personal protective equipment. This might be due to lack of prepared training courses about importance and method of using personal protective equipment.

Regarding to the total practices of body mechanics, the present study revealed that the majority of workers unsatisfactory practice regarding body mechanics during sitting, more than three quarters had unsatisfactory practice during stand up and lifting an object. These finding agreed with **Sain & Meena, (2018)**, who performed a study about " Exploring the musculoskeletal problems and associated risk-factors among brick kiln workers in Maharashtra, India" , (n=163) and reported that (67%) of workers had unsatisfactory total practice of body mechanics at brick factory that require bending for a long time. The

investigator point of view the lack of prepared training courses.

Regarding to workers total practice about first aid of burn and fracture, the present study revealed that more than three fifths and more than three quarter of workers had unsatisfactory practice respectively. These findings agreed with **Sheta& El Laithy (2017)**; who studied "Brick kiln industry and workers chronich respiratory health problem in Mit Ghamr Dakahlia ", (n=173) and found that (64%) of workers had unsatisfactory practices regarding first aid of burn, the occupational program improved workers' practices regarding first aid and its dangerous effect on health. This might be due to workers not receiving any program about first aid measures

The present study revealed that, more than three quarters of the studied workers had unsatisfactory total practices levels regarding occupational health hazards in brick factory (figure2). This finding agreed with **Saad et al. (2016)**, who performed a study about "knowledge, attitude and practices of workers who exposed to silicosis during work at Ain Shams University", (n=150), who reported that 56% of the studied sample had un satisfactory practice regarding occupational hazards. This finding might be due to most of workers hadn't obtain courses related to occupational hazards.

The present study revealed that there was a highly statistically significant relation between workers total knowledge level and total practices level. This finding agreed with **Kekana, (2021)**, who performed a study about "Occupational hazards of workers at bricks manufacturing industry in the polo Kwane municipality, limpopo province of South Africa", (n= 288), who found that a highly statically significant relation between workers total knowledge and total practices. This might be due to importance of increasing knowledge which positively affect the workers practice.

Conclusion:

Less than one fifth of workers had sinusitis, dry cough, gastroenteritis and nausea, more than one fifth had tingling in the extremities, two fifths of them had lower back pain, slightly less than one quarter had eye inflammation, more than one third had earache, dry skin and less than one third had hearing impairment. One fifth had poor total knowledge level regarding occupational health hazards, while more than three quarters of worker had unsatisfactory total practices regarding occupational health hazards. There was a highly statistically significant relation between workers total knowledge level and total practices level.

Recommendations:

1. Continuous health education program should be provided for workers at Brick Factory to improve their knowledge and practices regarding occupational health hazards safety measures, emergency, and first-aid measures..
2. Regular periodic screening for all workers to identify workers health problems and health needs.
3. Orientation program for the new workers before beginning of the work which should focus on work nature and the requirement of the job.

Reference

Ali, A. (2017). Occupational stress in brick industry with special reference to workers in Maharashtra, India. faculty of medicine; Pp:155-167.

Akter, T., Jhohura, F., Akter, F., Chowdhury, T., Mistry, S., Dey, D. and Rahman, M. (2016). Respiratory affection, alterations of some oxidative stress and autoimmune biomarker among workers exposed to silica dust with and without silicosis in one of the factories for refractories in Alexandria, Egypt. Journal of Health, Population and Nutrition; 35(1): 1-12.

Amponsah, K and Dartey, K. (2017). Occupational health and safety, key issues and concerns in Ghana; international journal of business and social science; 2(14):322-324.

Awan , R. (2011). Occupational health and safety in brick factory in Pakistan. open journal of air pollution; 6: 117-134.

Baletic, B. (2018). Chronic laryngitis in the brick industry information center. European. J; geosci; 6(3): 257–278 (2018).

Brauer, C., Kolstad, H., Ørbæk, P. and Mikkelsen, S. (2018). No consistent risk factor pattern for symptoms related to the sick building syndrome: a prospective population based study. International archives of occupational and environmental health; 79(6): 453-464.

Caffaro, F., Schmidt, S., Murphy, D. and Cavallo, E. (2018). Comprehension rates of safety pictorials affixed to brick factory among pennsylvania rural population, safety science; 103 (1): 162-171.

Correl, R. (2019). Occupational health adviser at the unit in university of standers, available at: [https:// www. standers. ac.uk/ ehss/ occupational health/](https://www.standers.ac.uk/ehss/occupationalhealth/). Accessed on 22- January- 2022.

Chukwu, E., Adaji, J., Okoro, A. and Faluyi, M. (2020). Health and environmental impacts of industrialization, acase study of dangote cement factory on obajana community, Kogi state, Nigeria), international journal of research and innovation in applied science ; 35(8): 24-61.

Degavi, G., Debbarma, S., Adola, S., Safayi, B., Gameda, U. & Utura, T. (2021). Occupational hazards and its relation with health-seeking and practicing behaviors among sanitary workers in Southern, Ethiopia, international journal of africa nursing sciences; 15 (1): 244-245.

Euro, L. (2019). Causes and circumstances of accidents at work in the EU, office for official publication of the European communities, luxembourg: 978-92.

- Ghally, S. (2016).** Occupational health hazards among flax factories workers in Shubra Meles Village, submitted for partial fulfillment master degree community health nursing, Benha University; Pp.154-155.
- Inbaraj, L., Haebar, O., Saj, F., Dawson, S., Paul, P., Prabhakar, A. and Alex, R. (2013).** Prevalence of musculoskeletal disorders among brick kiln workers in rural Southern India. *Indian journal of occupational and environmental medicine*; 17(2): 71.
- International Labor organization (ILO), (2020).** world statistics available at https://www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang--en/index.htm (Accessed 2-12-2021).
- Jain, A., Leka S., and Zwetsloot, G. (2018).** Risk factors for musculoskeletal disorders in brick workers of Rajasthan, available at: *american journal of nursing research*; 5 (6): 219-225.
- Joshi, S., Dahal, P., Poudel, A., & Sherpa, H. (2018).** Work related injuries and musculoskeletal disorders among child workers in the brick kilns of Nepal, *international journal of occupational safety and health*; 3(2): 2-7.
- Kekana, M., Luseba, D. and Muyu, M. (2021).** Occupational hazards of workers at bricks manufacturing industry in the Polo kwane municipality, limpopo province of South Africa. *journal of medical sciences*; 51(2): 271-279.
- Noorian, C., Parvin, N. and Mehrabi, T. (2017).** Workload and fatigue. *Space safety and human performance*, 1st ed., chapter 3; p.944.
- Pandey, A. and vats, H. (2016).** Bronchial asthma among brick industry workers in Chain District, *journal of academia and industrial research*; 5(1): 297-301.
- Saad, A. Radeal, A. and A liger, H. (2016).** The knowledge, attitudes and practices of workers who exposed to silicosis during work at Ain Shams University. *Egyptian Journal of occupational medicine*; 30 (2): 193-216.
- Sain, M. and Meena, M. (2018).** Exploring the musculoskeletal problems and associated risk-factors among brick kiln workers in Maharashtra, India; *international journal of workplace health management*; 45 (2): 331-337.
- Sheta, S. and El Laithy, N. (2017).** Brick kiln industry and workers' chronic respiratory health problems in Mit Ghamr District, Dakahlia governorate; *Egypt j occup med*; 39(1): 37-51.
- Smits, P., Hulshof, C., Bastiaanssen, M. and Van, J. (2018).** Time trends in musculoskeletal disorders attributed to work exposures in ontario using three independent data sources, 2004-2011, available at: *journal of occupational and environmental medicine*; 72 (4): 252-257.
- Spear, J. (2016).** Ergonomics, and occupational health and safety in the brick industry in Sweden: prevention and management, *journal of occupational medicine*; 58 (8): 349-355.
- Sunny, S., Fathima, F., Joy, J., Passah, B., Thomas, J. and Agrawal, T. (2020).** Occupational risk assessment and selected morbidities among cement brick unit workers in a rural area of Bangalore District, India, *international journal of occupational safety and health*; 12(1): 17-22.
- Shakir, A. and Mohammed, A. (2018).** Manufacturing of bricks in the past, in the present and in the future, a state of the art review; *international journal of advances in applied sciences (IJAAS)*; 2(3): 145-156.
- Thygerson, M., Sanjel, S. and Johnson, S. (2019).** Occupational and environmental health hazards in the brick manufacturing industry in Kathmandu Valley, Nepal, *occupational Medicine& Health Affairs; occup med health* 4(5): 1000248.
- Topuz, E., Talinli, I. and Aydin, E. (2018).** Integration of environmental and human health risk assessment for industries using hazardous materials: A quantitative multi criteria, *AAOHN J*; 50(1):16-25.

Occupational Health Hazards among Workers at Abo Mashhour Brick Factory

Tucker, J., Demirarslan, K., Cetin, D. and Karademir, A. (2018). Prevalence of auditory and vestibular symptoms in workers with auditory complaints exposed to occupational noise in Mansoura university in Egypt, journal of occupational medicine; 19 (6): 54-64.

Tusher, T., Ashraf, Z. and Akter, S. (2018). Health effects of brick kiln operations, a study on largest brick kiln cluster in Bangladesh;

South East Asia journal of public health; 8(1): 32-36.

World Health Organization (2018). The World Health Organization: working for better health for everyone, everywhere available at: <https://www.google.com/search?q=World+Health+Organization>. (Accessed on 7-october-2021).

المخاطر الصحية المهنية بين عمال مصنع ابو مشهور للطوب

اسماء صبيح سعيد عبدالسلام- محبوبة صبحي عبدالعزيز- بسمة محمد عبدالرحمن

يشكل عمال تصنيع الطوب قوة عمل صناعية مهمة في مصر تزداد تدريجياً مع تطور كل من التوسع الأفقي والرأسي في المدن المصرية القديمة والجديدة. يشارك العمال في مصانع الطوب في نقل الطين والطوب والقولبة والخبز مما يعرضهم للمخاطر الفيزيائية والكيميائية والبيولوجية والتي تعتبر سبب مهم للأمراض بين هؤلاء العمال. لذلك هدفت هذه الدراسة إلى تقييم مخاطر الصحة المهنية بين عمال مصنع أبو مشهور للطوب. وقد أجريت هذه الدراسة بمصنع أبو مشهور للطوب بقرية ورورا التابعة لمدينة بنها بمحافظة القليوبية. تم أخذ العينة المتاحة من العاملين في المكان السابق ذكره وبلغ عدد العينة الإجمالي 120 عاملاً وقد اسفرت نتائج الدراسة ان حوالي خمسي العمال لديهم مستوي معلومات جيدة عن المخاطر الصحية المهنية وربعهم لديهم ممارسات مرضية كما اوصت انه يجب تطوير وتنفيذ برنامج تثقيفي صحي للعمال في مصانع الطوب لتحسين معلومات العمال وممارساتهم تجاه مخاطر الصحة المهنية .