**Introduction**

A healthy work environment is one in which staff have made health and health promotion

a priority and part of their working lives. There are at least 250 million occupational accidents every year worldwide, at least 335,000 of which result in death. Developing countries have more fatal accidents than industrialized nations, so that emphasizing the need for health and safety education programs that focus on prevention ***(WHO, 2011)***.

Gasoline is a volatile mixture of toluene, xylene, benzene, and other hydrocarbons. The relative concentrations of these substances are dependent upon manufacture and use gasoline vapor inhalation to produce euphoric effects (***Takamiya et al., 2003).***

Gasoline is a colorless, pale brown or pink liquid, very flammable; it catches on fire quite easily, evaporates quickly, and forms explosive mixtures with air. Occupational exposure to gasoline occurs in oil refineries, petrochemical plants, petroleum distribution terminals, marine petroleum tankers, and among car mechanics ***(Kane & Newton, 2010).***

Workers in these occupations and industries may be at increased risk of cancer due to gasoline and some of its constituents such as benzene. Many of the harmful effects seen after exposure to gasoline are due to the individual chemicals in the gasoline mixture, such as benzene and lead in very small amounts. Inhaling or swallowing large amounts of gasoline can cause death. The levels of gasoline that killed people are about 10,000-20,000 ppm when breathed in, and about 12 ounces when swallowed ***(The American Association of Occupational Health Nurses, 2011).***

Workers should be protected from sickness, disease and injury arising from their work. Some two million people die every year from work-related accidents and diseases. An estimated 160 million people suffer from work-related diseases, and there are an estimated 270 million fatal and non-fatal work-related accidents/year. The suffering caused by such accidents and illnesses to workers and their families is incalculable ***(International Labour Organization, 2011).***

People constantly exposed to gasoline leaks have complained of severe nausea, bleedings, memory losses, dizziness and even partial seizures causing fatal heart attacks (***[Pandey](http://ezinearticles.com/?expert=Anubha_Pandey)***, ***2010)***. Major symptoms of intoxication with leaded gasoline include headache, fatigue, irritability, impaired concentration, wrist/foot drop, dyspepsia, constipation, colic, loss of libido and anemia (***Mudipalli, 2007).***

Occupational and environmental health nursing is a specialty that provides health and safety programs to workers and community groups. An occupational health nurse focuses on promotion and restoration of health, prevention of illness and injury, and protection from work-related and environmental hazards ***(McKay, 2011).***

**Magnitude of the Problem**

Occupational diseases have been recognized for many years and affect workers in different ways, such diseases are still problems in all parts of the world, the numbers of work-related diseases in developing countries are much higher in reality than the numbers that are reported, the numbers of cases and types of occupational diseases are increasing in both developing and industrialized countries (**International Labour Organization, 2011).**

The working age in Egypt ranges from 15-60 years, and the labor force increased in 2003 to 198,768 workers. An estimated 22,570 occupational injuries resulted in 127 fatalities, 366 cases ofhandicapped and 56 disabilities that lead to 459,779 days of absenteeism ***(CAPMS, 2005).***

Hazards in the workplace can be found in a variety of forms, including chemical, physical, biological, psychological, and non-application of ergonomic principles, etc. Because of the multitude of hazards in most workplaces and the overall lack of attention given to health and safety by many employers, work-related accidents and diseases continue to be serious problems in all parts of the world **(International Labour Organization, 2011).**

**Aim of the Study**

The study aimed to evaluate the effect of occupational program for improving the health of gasoline workersat stations through:

1. Assessing the workers’ knowledge and practices to determine their needs regarding the effect of gasoline on their health
2. Designing and implementing an occupational program according to their needs.
3. Evaluating the effect of program on improving the workers’ knowledge and practices related to their health.

**Research Hypothesis**

The occupational program will improve the gasoline workers’ knowledge and practices related to their health.

**Subjects and Methods**

Research design

A quasi experimental design was utilized to conduct the study.

Setting

The study was conducted at all gasoline stations in Benha City; it compromises 10 stations that are namely: Abd Elaziz Eldebaky Station, Khaled Ahmed Station, Ahmed and Mohy Eldepaky Station, Yousef Khelds Station, Hosam Yasin Elgharieb Station, Naguib Bakr Station, Anhar Hassan Taha Station, Sania Ibrahium Morsy Station, Mohamed Samir Heiram Station, and Talal Abd Elhady Station (refused to participate in the study).

Sample

All workers at the gasoline stations in Benha City were recruited for the study. These were (41) workers distributed as follows: (6) car washers, (17) filling gasoline, (9) administrators, and (9) workers for repairing tyres.

Tools for data collection

Two tools were used to collect data:

I- **An interviewing questionnaire** to assess sociodemographic characteristics of the studied sample, workers’ physical health, knowledge, and emergency care. It consisted of four parts:

***The first part*** is concerned with sociodemographic data as: Age, years of working at station, training program, smoking, education, regular examination, working days/week, and period of working hours.

***The second part*** included 5 questions related to physical health status of gasoline workers as regular investigation, health problems during last month as respiratory problems, gastrointestinal problems, nervous system problems, skin problems, and eye problems.

***The third part*** included 4 questions related to workers’ knowledge about practices during emergency of gasoline hazards' occurance as reported by the workers; as eye care, respiratory care, digestive care, and skin care.

***The fourth part*** included 11 questions about workers knowledge related to the effect of gasoline on health as gasoline content, signs of gasoline toxicity, effect of gasoline on eyes, skin, respiratory system, nervous system, and the digestive system and how to prevent effect of gasoline hazards.

**Scoring system:** For knowledge; the correct answer (good) was scored 2, while a correct but incomplete answer (average) was scored 1, and the unknown or wrong answer (poor) was scored 0.

**II-** **Observational Checklist** which includes two parts: (a) Data related to station environment such as; safety, cleanliness, ventilation, facilities (bathroom, dressing room); and b) Workers’ practices related to safety measures during working with gasoline

as smoking, eating, and drinking during working, use of gloves, use of special shoes, and follow up body mechanics.

**Scoring system:** For practices a regular positive item (good) was scored 2, while for sometimes positive items (average) was scored 1, and never or negative item (poor) was scored 0.

**Validity Test:** Content validity test was done through five expertises from Faculty members of Community Health Nursing Department.

Ethical Consideration**:**

Oral consent was taken from each worker and director of the station, they were informed that data will be used for research purposes only, and will be treated in confidential manner.

**Occupational Health Program Construction:**

The program was conducted in four phases:

**I. Preparatory phase:** A review of recent, current, national and international literature in various aspects related to the gasoline stations workers (health problems related hazards and needs).

**II. Assessment phase:** The pre-test questionnaire was implemented to identify the health condition, and environmental hazards and practices when dealing with emergency health problems through their knowledge.

**III. Planning and implementing phase:** The intervention program was designed with general objective to improve the gasoline station workers’ knowledge and practices to prevent hazards during working at stations. The content of the program included the workers’ knowledge related to work hazards in stations according to their needs toward health problems such as; respiratory system, skin, nervous system, gastrointestinal tract, and eye to improve their knowledge and practices.

Theory sessions (two) included:

* Knowledge related to gasoline as; meaning, toxicity, and practices during emergency of gasoline hazards.
* Danger of gasoline on body systems such as; ***respiratory system*** (dyspnea); ***eye*** (irritation, eye painful); ***skin*** (dermatitis, skin burn, and dryness); ***GIT*** (vomiting, burning sensation in mouth and esophagus); and ***nervous system*** (loss of consciousness, loss of sensation in nerve ending, headache, and drowsy).
* Signs and symptoms of gasoline toxicity such as dizziness, headache, regular bleeding, nausea, and convulsions which may lead to death.

Practical session (one) included:

* Safety measure practices to prevent gasoline hazards. As using gloves, wearing mask, no smoking, using special shoes and uniform, and following body mechanics during work.
* Practices during emergency care related to gasoline hazards such as: For eye; immediate washing of eye with running water, and observing eye for any redness. For respiratory system; transfer casual worker at a place with fresh air, put him in semi sitting position, and encouraging him to do breathing exercises. For skin; immediately washing skin with water. For gastrointestinal tract; put casual worker in comfortable position, instruct him to avoid trying vomiting, and encourage the casual worker to drink a lot of juice.

Sessions were done twice/weekly from 10.00 a.m. to 3.00 p.m. Two sessions for theory and one session for practices. Workers participated in the sessions according to their working time schedule. The duration of each session lasted 15-30 minutes for theory sessions, and 30-45 minutes for the practical session.

**IV.** **Evaluating phase**

Evaluating the effect of the occupational program for improving the health of gasoline workers was performed through a post-test that was similar to pre-test to detect changes.

**Field work:**

* Preparation of data collection tools was carried out over a period of four months from beginning of May, 2010 to beginning of September, 2010.
* An official letter was issued from the Dean of Faculty of Nursing to the Director of Supply administration in Benha City to carry out the study.
* Approval was taken from the director of every station to conduct the study.