

# COMMUNITY MEDICINE

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# Occupational Health



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# Why is occupational health and safety important?

- Work plays a central role in people's lives, since most workers spend at least eight hours a day in the workplace, whether it is in an office or in the factory, etc. (People work for a lot of years in certain occupations and they're exposed to certain factors that greatly affect their health).
- Workers represent half the world's population (3.5 billion) and are the major contributors to economic and social development.(that's why taking care of the work environment is very important ).
- Therefore, work environments should be safe and healthy. Yet this is not the case for many workers.
- Every day workers all over the world are faced with a multitude of health hazards (depending on the occupation) such as: dusts; gases; noise; vibration; & extreme temperatures. (anything that may adversely-in a bad way- affect their health is considered a hazard)

# So, what is the problem with occupational health?

People work because they need money to feed their family

- The health of workers is an essential prerequisite for household income, productivity and economic development. Therefore, restoring and maintaining working capacity is an important function of the health services.
- Unfortunately some employers assume little responsibility for the protection of workers' health and safety.
- In fact, some employers do not even know that they have the moral and often legal responsibility to protect workers.
- As a result of the hazards and a lack of attention given to health and safety, work-related accidents and diseases are common in all parts of the world.

If people get sick everyday because of their work then they can't work or commit to their occupation  
Usually the people who work are the healthy people. The sick people can't commit to work

# Why is occupational health and safety important?

We will be faced as physicians with patients coming with symptoms and problems so we should ask about their age, education and occupation, because what they do everyday affects them a lot and gives the physician an indication about the problem and we can know what hazards is there.

- Working in universities, government, military → Formal sector No insurance and not regulated
- In many countries more than half of workers are employed in the informal sector, with no social protection for seeking health care and lack of regulatory enforcement rules of occupational health and safety standards.  
Their rights aren't preserved **Can't be applied**
  - Occupational health services cover mostly big companies in the formal sector. But, more than 85% of Farms, small shops workers in small workplaces, informal sector, agriculture and migrants worldwide, do not have any occupational health coverage. **Used to work for low wages / payment**
  - Research has demonstrated that workplace health initiatives can help reduce sick leave absenteeism by 27% and health-care costs for companies by 26%. **Providing health insurance, taking care of health, providing personal protection equipments** **If there is good and healthy conditions**

<https://www.who.int/en/news-room/fact-sheets/detail/protecting-workers'-health>

# Why is occupational health and safety important?

- The ILO and WHO also estimate that globally, more than 2 million people die every year from work related diseases and injuries.
- 4-6% GDP is lost due to illnesses and injuries due to unhealthy and hazardous working conditions
- About 70% of workers do not have any insurance to compensate them in case of occupational diseases and injuries( important to take protective measures to prevent diseases from happening )

<https://www.who.int/en/news-room/fact-sheets/detail/protecting-workers'-health>

**GDP: Gross Domestic Product**  
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# Why is occupational health and safety important?

Certain occupational risks, such as injuries, noise, carcinogenic agents, airborne particles and ergonomic risks account for a substantial part of the burden of **chronic diseases**:

**37% of all cases of back pain** More than 1/3 of back pain injuries are due to work conditions

**16% of hearing loss** Due to occupational injury, working with loud noises for a long time

**13% of chronic obstructive pulmonary disease**

Those who work with dust and not wearing a mask to prevent dust from getting to the lungs and cause disease

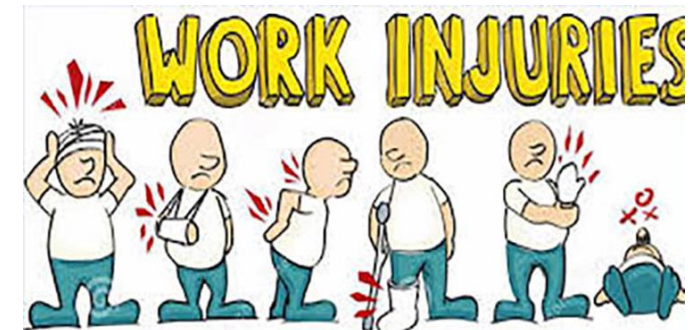
**11% of asthma**

**9% of lung cancer**

**8% of injuries**

**8% of depression**

**2% of leukaemia**



# Definition of Occupational Health:

Until now it is used

Since 1950, the International Labour Organization (ILO) and the World Health Organization (WHO) have shared a common definition of occupational health.

**Occupational Health** is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing <sup>Being away</sup> departures from health, controlling risks and the adaptation of work **environment** to people, and people to their jobs. (ILO / WHO 1950)

To manufacture things in the workplace like chairs and desks to provide a healthy work environment. The instruments or machines that they are working with are adapted to not harm or cause injuries.

The science and practice of occupational health **involves several disciplines**, such as occupational medicine, nursing, ergonomics, psychology, hygiene, safety among other disciplines.



# Occupational Health, History

The first to talk about occupational safety

- The first written discussions specifically directed toward matters of occupational safety and health were those of <sup>Swiss physician</sup> **Paracelsus**, in the fifteenth century.
- In 1700, **Bernadino Ramazzini**, an Italian physician, published the first book on occupational medicine, *De morbis artificum diatriba* (***Diseases of Workers***), and he is generally regarded as the "father of occupational medicine." Ramazzini wrote about the health hazards for dozens of occupations. (That used to be there at that time)



# Occupational Health, History

- In the United States, in the early twentieth century, Dr. Alice Hamilton became the first woman physician appointed to a faculty position at Harvard University, School of medicine where she worked at the School of Public Health promoting safe and healthful work practices in the United States.
- She has been recognized as the leader of the occupational medicine movement in the United States, which came relatively late compared with that in Europe.

# Identifying Safety and Health Hazards

The terminology used in Occupational Safety and Health (OSH) varies, but generally speaking:

If we know these factors we can control them

Anything that have the potential to adversely effect human health

- A **hazard** is something that can cause harm if not controlled.
- The **outcome** is the harm that results from an uncontrolled hazard.
- A **risk** is a combination of the *probability* that a particular outcome will occur and the *severity* of the harm involved.

The calculation of risk is based on the likelihood or probability of the harm being realized and the severity of the consequences.

# Identifying Safety and Health Hazards, example

For example, repetitively carrying out manual handling of heavy objects is a **hazard**. 

The **outcome** could be a musculoskeletal disorder (MSD) or an acute back or joint injury.

The **risk** can be expressed numerically (e.g. 0.5 or 50% or 50/50 chance of the outcome occurring during a year) OR in relative terms can be expressed as (e.g. "high/medium/low" risk of developing outcome during a certain time period).  
Developing back/joint injury

# Most Common workplace hazard groups

## 1- Mechanical hazards.

*By type of agent:* That cause the harm

• Falling down from a height (construction workers) Very frequent

• Confined Space Working in very tight places for a long time

• Impact force Hitting someone at workplace

• Slips and trips Very common ,from wires, broken steps

• Falling on a pointed object Depends on what hazards is there

• Compressed air/high pressure

• Entanglement The hand of the worker could be tangled in the machine

• Equipment-related injury

*By type of damage:* Depends on the agent

Crushing, Cutting, Friction and abrasion, Shearing ,  
Stabbing and puncture



Slippery surface  
← That's why we should pay attention to the wet floor warning signs

## 2. physical hazards .

- Noise
- Vibration
- Barotrauma (hypobaric/hyperbaric pressure) **Baro : Related to pressure**  
**Trauma: in a way that can harm the worker**
- Ionizing radiation
- ✱ • Electricity **If there is a potential to be electrocuted**
- ✱ • Asphyxiation **To have a constricted airway, the air doesn't have much space so the person can't breathe**  
اختناق
- Cold stress (hypothermia)
- Heat stress (hyperthermia)

مهم نميز إنهم  
physical hazards

## 3- Biological Hazards:

Specifically in medicine and medical professions

The exposure is from the patients

Bacteria

Virus

Fungi

e.g. Blood-borne pathogens

e.g. Tuberculosis

The lungs are infected

Transmitted by respiratory secretions and breath

Very common exposure . Like hepatitis B virus, you can never guess which patient you are treating and giving injections is infected with the virus

In dentistry, hepatitis B is the number one danger because when you are injecting anesthesia you give, what happens very commonly is that when you are recapping the needle you can stick yourself with it, any little drop of blood on the tip of the needle that you removed from the patient can get you infected.

We can't do tests on every patient so you should suppose that every patient is infected or a carrier

# 4- Chemical hazards

include:

Acids Those who work with chemicals depending on their workplace

Bases

Heavy metals →

**Lead,, Mercury**

In dentistry they have amalgam silver fillings . In the old days they used to prepare it from the powder of silver and a drop of Mercury, they make with it a dough by hand leading to Mercury poisoning especially in dental assistants. Now they come in capsules in a healthy way.

Solvents Found in paint

Particulates: Fumes (noxious gases/vapors), silica  
particles (pneumoconiosis) Harm the respiratory system  
Most common occupational health problem in the world

Highly-reactive chemicals

Fire, explosion hazards.

Many professions have silica dust at workplace frequently all the time and the workers aren't using PPE – personal protective equipment-. When you use a mask you will not inhale the silica particulates.



# Pneumoconiosis

Exposure to very small particulates of silica

- Pneumoconiosis has been the most serious and preventable occupational disease for a long time...where inhalation of dust has caused interstitial fibrosis because of Inadequate use of personal protective equipment (PPE).
- The most common workplace mineral dusts that are known to cause pneumoconiosis are asbestos, silica (rock and sand dust), and coal dust.   
From cutting stones  
Limited uses, related to lung cancer, very regulated
- In China, the number of workers exposed to silica containing dusts was estimated to be as high as 12 million .   
In occupations that are exposed to silica
- Pneumoconiosis represents 70–80% of the total number of cases of reported occupational diseases in mining industry, sand blasting, textile industry, and ship repair.   
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## 5- Psychosocial issues include

- Work-related stress, whose causal factors include excessive working time and overwork .
- Violence from outside the organization .  
The patients families are worried so they take that on the doctors and nurses and hit them
- Bullying, which may include emotional and verbal abuse (inside the organization)
- Sexual harassment
- Burnout After working for a very long time in a stressful environment –especially the nurses who spend their time with the patients – they try to sympathise with them all the time but they reach a point where they can't work anymore in the field and go to more paperwork or change their occupation.
- Exposure to unhealthy elements during meetings with business associates, e.g. tobacco, uncontrolled alcohol

# Psychosocial hazards

In 1986, the National Institute for Occupational Safety and Health (NIOSH) listed **psychological disorders** among the **ten leading work-related diseases** and injuries among U.S. workers.

It's so easy to diagnose physical obvious injuries ( you can see a cut or a burn )but the psychosocial injury is difficult to catch.

Psychosocial hazards, however, have received little attention over the past decades. This is mainly because of the focus on controlling physical, chemical and biological hazards in workplaces.

## 6. Musculoskeletal Disorders

**Musculoskeletal diseases are a major industrial problem in terms of both disability and cost.**

This is very important because in countries where they calculate the cost of health-care and what lawsuits they have to pay to compensate for, they think a lot about musculoskeletal disorders. Especially back pain that is hard to detect, it doesn't show all the time so they have to prevent it as much as possible

- **These diseases cause a large number of permanent disability ratings and a burden to medical services.**
- **Low back pain occurs in 50% of workers in heavy industries.**
- **Repetitive loadings appear to fatigue and weakens the tissues.**

- Avoided by the employment of good ergonomic design
- The need to reduce musculoskeletal injuries in the workplace has become acute.

**In the United States , they take extreme care that no one lift any box, they use a trolley instead. Never do this movement (in the picture)**



# Occupational Health in Health Workers

A health care facility is a workplace as well as a place for receiving and giving care. Health care facilities around the world employ over 59 million workers, who are exposed to a complex variety of health and safety hazards everyday, including:

- biological hazards, such as TB, Hepatitis, HIV/AIDS, SARS, covid 19
- chemical hazards, such as, glutaraldehyde, ethylene oxide
- physical hazards, such as noise, radiation, slips trips and falls
- ergonomic hazards, such as heavy lifting
- psychosocial hazards, such as shiftwork, violence and stress
- fire and explosion hazards, such as using oxygen, alcohol sanitizing gels
- electrical hazards, such as frayed electrical cords.

# Occupational Health Hazards among Doctors and Nurses

Always wear a mask with patients even when you are talking to them

**Infectious Diseases:** Tuberculosis: Common among health care workers, Hepatitis B, Hepatitis C, HIV, Influenza, **Blood-borne by needles**  
HIV is very dangerous and you should be careful with dealing with it, hepatitis B is much more dangerous because any drop of blood can infect you

**Risks related to stress and overwork:** Depression, suicide, hopelessness, Burnout, Restricted social life, prone to alcohol/ drug abuse/ drug exposure.

**Stress of balancing Family life:** Kind of work and night duties effect family life very adversely, Specially female doctors. Completing family will affect their careers, most of time. High rates of divorces, Stress related diseases.

**Life style diseases:** mainly sedentary work and long hours of working, makes them prone to life style diseases like ischemic heart disease , hypertension etc. **Can't do any physical exercise as usual**

**Exposure to radiations:** specially in radiology and oncology. female doctors are more affected.

**Lack of exposure to sunlight:** affects bones , deficiency of vitamin D and predisposes to depression. **In many days you can't even see the sun**

# Occupational Health Hazards among Doctors and Nurses

**Risk of catching resistant infections** and sometimes there is risk that they carry these deadly bacteria to their homes. So their family members and children are at risk. **Because they are resistant to many antibiotics**

**Risk of working in disaster areas, floods, earthquakes.**

**Change in natural bio flora of doctors and nurses.** It is replaced by hospital bio flora. If they get infection, it is difficult to treat. **Because they are spending a lot of time with being exposed to many substances.**

**Risks because of legal problems and violent patients:**

Legal trouble adds to further stress.

Verbal abuse and threatening is very common.

Fear of physical assault can really harm doctors and family members.

Excessive and unilateral regulation puts doctors at the receiving end of the discontent (doctors always blamed). **(The weak side)** 🤝