

Modified by: Ayat Nabil, Lina Ayasrah  
Corrected by: Noor shahwan, Abdelhadi Okasha



**Dr. HAMZA ALDURAIDI**

**COLOR OF SLIDES IN BLACK, AND COLOR OF DOCTOR INFORMATION IN GREEN**

# Occupational Health

**Dr. Hamza Alduraidi**

Community Medicine

# Why is occupational health and safety important?

- ▶ Work plays a central role in people's lives, since most workers (between the ages 20 and 60), in average, spend at least eight hours a day for five days a week in the workplace (occupational environment), whether it is in an office or in the factory, etc.
  - People work in different types of occupations, which require different levels of physical and mental involvement.
  - There is some physical and mental costs, of spending this much time doing certain type of work to make living out of it, such as the health cost of working.
- ▶ Workers represent half the world's population and are the major contributors to economic and social development.
- ▶ Therefore, work environments should be safe and healthy. Yet this is not the case for many workers.

# Why is occupational health and safety important?

- ✓ Defiantly they are important, because there are lives that can be saved if we pay more attention to occupational health and safety.
- ▶ Every day workers all over the world are faced with a multitude of health hazards, **on physical level**, such as: dusts; gases; noise; vibration; & extreme **(heat or cold)** temperatures.
  - **Probably they have consequences on physical health on the short, intermediate or long run.**

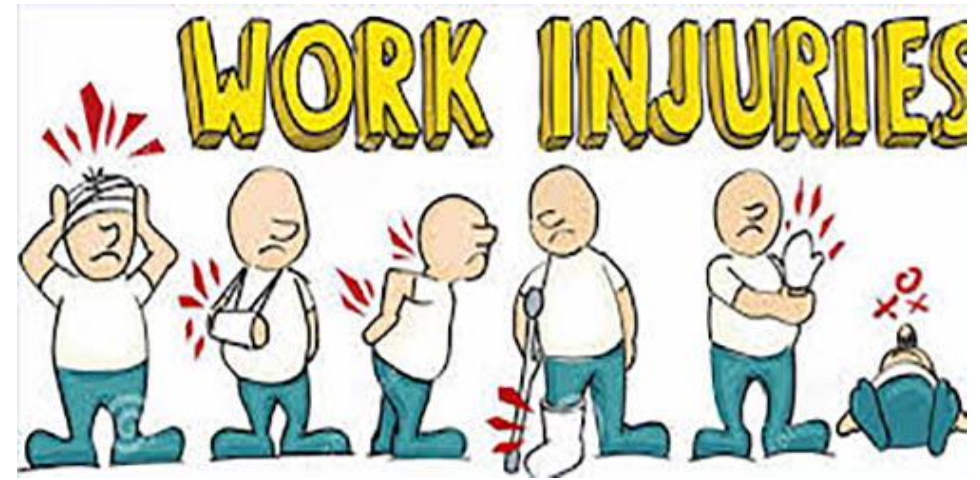
- ▶ Occupational hazards cause or contribute to the premature death of millions of people worldwide and result in the ill health or disablement of hundreds of millions more each year.
  - The death can happen immediately, because of certain hazards that kill the person instantly in the place, like falling down from a height or getting hit by heavy object.
  - Many of these deaths happen on the long run, like when someone works in coal mines **مناجم الفحم**, they inhale toxic substances every day, after a decade or two they are diagnostic with lung cancer and then they die.
- ▶ The International Labor Organization (ILO) and the World Health Organization (WHO) estimate that 5-7% of global fatalities (huge) attributable to work-related illnesses and occupational injuries.

# Why is occupational health and safety important?

- The ILO and WHO also estimate that globally there are 2.3 million occupationally related deaths each year attributable to work.
- Overall, **cancer** forms the largest component (32%) followed by **work-related circulatory diseases** (23%), **communicable diseases** (17%) and **occupational accidents** (18%) with the latter two being far more prevalent in developing and rapidly industrializing countries.
- Over 313 million nonfatal occupational accidents (with at least 4 days absence), **maybe it doesn't lead to death, but it is harmful to personal health.**

# So, what is the problem with occupational health?

- ▶ Unfortunately some employers assume little responsibility for the protection of workers' health and safety.  
→ Most employers, especially in the private sector, take care about your productivity and ability to work as long as possible, which is selfish thing to do.
- ▶ 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.



► قانون العمل والعمّال (في كل دولة) يضمن:

- حماية العمال في أماكن العمل
- حماية حقوقهم المالية والاقتصادية
- حقهم في الحصول على الإجازة والمغادرة والتعويض
- حقهم في الحصول على التأمين الصحي والضمان الاجتماعي والتقاعد

**\*\*But little attention is being paid to the protection of their health and safety during the working hours.**



# Definition

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, **psychological** and social well-being of workers in all occupations by **preventing departures from health** (which may cause by: illness, injury, accident, stress, **psychological pressure**), controlling risks and the adaptation of work to people, and people to their jobs.  
(ILO / WHO 1950)

# Identifying Safety and Health Hazards

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

- ▶ A **hazard** is something **dangerous** 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.
- ✓ **Risk is relative**

- ▶ Hazard examples: مجرد وجوده مصدر للخطر (سواء تعرض أحدهم للخطر أم لا)
- ▶ برميل من مادة حمضية وما عليه غطاء
- ▶ سلّم ما إله درابزين
- ▶ أشياء ثقيلة محطوطة على السدّة ومش محمية - ممكن توقع عراس الناس بأي لحظة

# Identifying Safety and Health Hazards

- ▶ To be able to promote occupational health of people, you need first to identify the hazard in the place. (You have to have a very clear understanding of what the physical and chemical and biological hazards and how harmful they can be)
- ▶ For example, repetitively carrying out manual handling of heavy objects is a **hazard**.
  - carrying the objects
- ▶ The outcome could be a musculoskeletal disorder (MSD) or an acute back or joint injury.
- ▶ The **risk** can be expressed numerically (e.g. a 0.5 or 50/50 chance of the outcome occurring during a year), in relative terms (e.g. "high/medium/low").



The risk can be classified into:

# Common workplace hazard groups

## 1-Mechanical hazards. → One of the most obvious

### *By type of agent:*

- ▶ Falling down from a height (construction workers)
- ▶ Confined Space
- ▶ Impact force
- ▶ Slips and trips
- ▶ Falling on a pointed object
- ▶ Compressed air/high pressure
- ▶ Entanglement
- ▶ Equipment-related injury



### *By type of damage:*

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

## 2- Physical hazards.

- ▶ Noise
- ▶ Vibration
- ▶ Barotrauma (hypobaric/hyperbaric pressure)
- ▶ Ionizing radiation
- ▶ Electricity
- ▶ Asphyxiation
- ▶ Cold stress (hypothermia)
- ▶ Heat stress (hyperthermia)

### 3- Biological Hazards:

→ Everything alive that can harm you, like any pathogen.

❑ Bacteria

❑ Virus

❑ Fungi

e.g. Blood-borne pathogens

e.g. Tuberculosis

أمثلة: ✓

- الأطباء والممرضين في فرق التقصي الوبائي لفيروس كورونا.
- الأشخاص الذين يعملون مع الحيوانات في حديقة الحيوانات أو أماكن بيع الحيوانات الأليفة (أمراضهم قد تعدي الإنسان).

## 4- Chemical hazards

include:

- ❑ Acids
- ❑ Bases
- ❑ Heavy metals
- ❑ Solvents
- ❑ Particulates: Fumes (noxious gases/vapors), silica particles (pneumoconiosis)
- ❑ Highly-reactive chemicals

Fire, explosion hazards.

What is the name of the respiratory condition caused by inhaling silica particles?

The longest word in English language:

*Pneumonoultramicroscopicsilicovolcanoconiosis*

\*\*هذا السؤال مش داخل بالعلامة

can go directly to your lungs, and cause respiratory conditions, which may be chronic, or they can be very severe and lead to death.



## 5- Psychosocial issues include

- ▶ Work-related stress, whose causal factors include excessive working time and overwork.  
▶ مثال على ذلك: الضغط على الكادر الطبي في مستشفى البشير حاليا بسبب كورونا.
- ▶ Violence from outside the organization.
- ▶ Bullying, which may include emotional and verbal abuse
- ▶ Sexual harassment
- ▶ Burnout → When you work more than you can, Nurses are the most people facing this issue.
- ▶ Exposure to unhealthy elements during meetings with business associates, e.g. tobacco, uncontrolled alcohol.

## 6- Musculoskeletal Disorders

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

- ▶ 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.

✓ أمثلة:

- سائقو أوبر

- سائقو الشاحنات

→ driving for many hours with very few and short breaks..

It's very danger on their vertebral column



- ▶ Avoided by the employment of good **ergonomic design**
- ▶ The need to reduce musculoskeletal injuries in the workplace has become acute.
- ▶ **Ergonomics:** is an applied science concerned with designing and arranging things people use for work so that insure the highest possible level of health and safety to the individuals.
- ▶ This science combines occupational therapy and industrial engineering.

# Risk assessment

to be able to control and promote occupational health you've first to assess the risk, assess to what extent the person is exposed to occupational health risk in whatever type of work they do

Modern occupational safety and health legislation usually demands that a risk assessment be carried out prior to making an intervention.

It should be kept in mind that risk management requires risk to be managed to a level which is as low as is reasonably practical.

This assessment should:

- ▶ Identify the hazards that exist
- ▶ Identify all affected by the hazard and how why, when?
- ▶ Evaluate the risk is it low/medium/high
- ▶ Identify and prioritize appropriate control measures what to control first and what to focus on most

# Risk Assessment

- ▶ The calculation of risk is based on the likelihood (chance of having particular harm for the people how work there) or probability of the harm being realized and the severity of the consequences.
- ▶ This can be expressed mathematically as a quantitative assessment (using numbers or categories) (by assigning low, medium and high likelihood and severity then you begin planning how to significantly change the environment in a way that minimize the risk as much as possible to be close to zero since the the ultimate goal is zero risk environment
- ▶ The assessment should be recorded and reviewed periodically and whenever there is a significant change to work practices

# Risk Assessment

- ▶ The assessment should include practical recommendations to control the risk( provide a very clear plan on how to implement changes to decrease and eliminate hazards and minimize the risk as much as possible ,we do this during the risk assessment phase).
- ▶ Once recommended controls are implemented, the risk should be re-calculated to determine if it has been lowered to an acceptable level.
- ▶ Generally speaking, newly introduced controls should lower risk by one level, i.e., from high to medium or from medium to low.

# Occupational Health in Health Workers

one of the most important sectors of work in the world is health industry which include the doctors, pharmacist , nurses and others how work in hospital in clinic in general , they're exposed more than others for a specific hazard as we can see below

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
- ▶ chemical hazards, such as, glutaraldehyde, **oxide like** ethylene oxide (**expose to chemotherapy if work in oncology department** )
- ▶ physical hazards, such as noise(**like the noise of the ICU machine , whine of the patient in ER or when women in childbirth** ), radiation(**how always go to radiology**), slips trips and falls **انزلاق سقوط**
- ▶ 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

**Infectious Diseases:** Tuberculosis: Common among health care workers, Hepatitis B, Hepatitis C, HIV, Influenza,

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

**Stress of balancing **between** Family life and **professional life**(the **requirements/demands of the work**):** Kind of work and night duties effect family life very adversely, Specially female doctors. Completing family will effect 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.

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

**Lack of exposure to sunlight:**(**like working for long shift indoor or at night**)effects bones, deficiency of vitamin D and predisposes to depression (**at psychosocial aspect**)



# Occupational Health Hazards among Doctors and Nurses

- ▶ **Risk of catching resistant infections (antibiotic resistant bacteria )** and sometimes there is risk that they carry these deadly bacteria to their homes. So their family members and children are at risk.
- ▶ **Risk of working in disaster areas (whether it's natural or manmade disaster) , floods, earthquakes. So they're the first line of defense for the community as we see in covid19 pandemic**
- ▶ **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.
- ▶ **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).

# Rules to Remember When Working With Radiation

Everyone must take radiation overexposure seriously. Hence, preventive measures and rules must be strictly followed to avoid critical health conditions.

- ▶ Acquire adequate training to better understand the nature of radiation hazards(you expose to).
- ▶ Reduce handling time of radioactive materials and equipment(to minimize your exposure to radioactive material as much as we can).
- ▶ Be mindful of your distance from sources of radiation. Increase distance as much as possible.
- ▶ Use proper shielding (uniform or any protective measures or gear ) for the type of radiation.
- ▶ Isolate or contain harmful radioactive materials properly(don't deal it like any other material so don't put / throw it randomly ).
- ▶ Armor yourself with appropriate protective clothing and dosimeters.
- ▶ Conduct contamination surveys in the work area.
- ▶ Do not eat, drink, smoke, or apply cosmetics in an area where unsealed radioactive substances are handled.
- ▶ Observe proper radioactive waste disposal (very carefully ).
- ▶ Stick to the policy of your institution when you deal with the radio