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- **Occupational Health :**

Last time, the topic was The Historical Development of Occupational Health.
Father of Occupational Health/Medicine: Bernardino Ramazzini.

- ✓ **Note**: You can make good sum of money out of becoming an occupational health specialist in a developed country.
  Even those who have a degree in Internal Medicine, they can come back and have a Master's degree in Occupational Health to improve their practice and ending up with having more customers.

- ✓ We talked about the OSHA (Occupational Safety and Health Act) which is then changed form an act into an administration.
  The OSHA is one of the major acts worldwide (started in the U.S) that regulates the rights of the workers for subsidence and injury exposure that could lead to death.

- ✓ Recall: The outcome of industrial evolution was that a new job came out in the British Parliament which is the factory inspector.
  Now, the factory inspector is working for OSHA and is responsible for the people's health and currently his job is of a wider spectrum - the job includes much more than before and more knowledge about health hazards-.

- ✓ Occupational and case law is controlling safety, health and environment.
  So, you should be more aware of these laws and regulations. In many countries, like the U.S, as a worker they should know their rights. If you know your rights, then you can protect yourself or you can ask for subsidy (financial assistance) in case of injury.
  So, if you don't know it, you'll lose it. Therefore, one of the things to know is about the institution (law) and what's allowed for you.

- ✓ Example: If you were a surgeon and your finger was exposed to an injury during an operation (this finger worths millions because you'll not be able to do further work). Suppose, you're in your 60s and you still have more 10 years to work. Then, how is the law applied? If you have a good lawyer and you know your rights, he'll calculate how much money you make per year now and then multiply it by 10 (since you still have 10 more years to go). Thus, you'll still have good money and even if you don't work anymore, you still have a respectful life similar to the previous one. Though, you'll be living in some agony and depression because you're not a surgeon anymore.

- ✓ This is not the case in all countries; in the 3rd world countries, if you have an accident, it will all be your fault, you'll never be the same again since your subsidy will be very small and sometimes you'll be kicked out from your job… therefore, it’s again a constitutional issue.

- ✓ Therefore, the occupational health specialist is responsible of operational procedures to plan & develop safe practice and workplace layout. They take a look at the layout of the place, say whether it's okay or not and then something should be done in case there is a problem.

- ✓ Example: The wire shouldn't be randomly put on the ground because the worker could fall and get hurt. So, it should be put underground away from people's way to omit the possibility of having an electrical shock also.

- ✓ Functions of Occupational Health: safety health and environmental sciences, hazards control systems, record keeping system, systems for attaining safety through design in addition to mathematics and statistics.

- ✓ one problem about the 3rd world countries is that they don't respect figures while others do, though, figures are important in life because it's becoming more digital and we have to know how to present data since those specialists are responsible of the workplace and have a certain number of workers, who some had accidents.

- ✓ Many countries in the world started to have their own regulations ((after the U.S (OSHA))) when it comes to occupational health, like: European Union member states, European Agency for safety and health at work also the personal protective equipment. All of these are legislations/regulations that started after OSHA in other parts of the world to solve their own problems.

- ✓ Almost 10 years ago when the European Union was established, there were the British regulations, the French regulations, the Yugoslavian regulations ... Etc. Now, they brought them together in one regulation.

- ✓ Even though, the U.K is part of the European Union, but it somehow kept it's own regulation and standards and might utilize some of the Union's regulations.

- ✓ U.K ... Health and Safety Executive.
  U.S ... OSHA (Occupational Safety and Health Administration).

- ✓ In Canada, it has it's own Canadian Centre for Occupational Health and Safety (CCOHS) -1978, Canada doesn't go along with the U.S in relation to health.

- ✓ In Malaysia, it had it's own legislation -1994- since it has become an industrialized country and the number of workers has risen, so, it should have it’s own regulations & it's in a good state.

- ✓ In People's Republic of China, the Chinese people were a bit behind -2002-, so, it's not so good.
  During the last 20 years, they had an industrial evolution like the one that happened in the middle-centuries. Even though, it's a very high industrialized country and the most developed country in the constructive field, but it's legislations for occupational safety are not at the same level of this quick development. That's why we hear a lot of mines being blocked by rocks with Chinese workers kept inside (a clue for the unsafety, lack of both follow-up procedures and safety regulations).

- ✓ First, the U.S started then other countries followed it's route. So, some countries borrowed regulations from OSHA (They can use them but cannot adopt them).

- ▪ Identifying Safety and Health Hazards :
  Sometimes, in the field of Occupational Health and Public Health, we differenciate between hazards and risks.

- ✓ Hazard: something that can cause harm if not controlled.
  Example: Electricity is a hazard. If you touch it, it will cause you an electrical shock.
- ✓ Risk: A combination of the **probability** that a particular outcome will occur and the <u>severity</u> of the harm involved.
  Example: The presence of a wire on the ground is a hazard; **the risk is 20% to have an electrical shock out of it.** And we can say that <u>50% is the possibility of having severe electrical shock due to the exposure to high voltage of the wire</u> (meaning: if a person gets that electrical shock, 50% is the possibility of that shock to be severe)

- ✓ Outcome: the harm that results from an uncontrolled hazard.
- ✓ Thus, hazard is the source from where the problem can come and the risk is the percentage or probability of the harm.

- ✓ For instance, carrying a heavy object manually is a hazard. The outcome could be Musculoskeletal disorder or an acute back ache or joint injury (Acute back ache due to false lifting of heavy objects starts usually in young age). The risk is expressed numerically 50%:50% or 0.5 meaning that 50% is the probability to have acute back ache and 50% is the probability of no acute back ache to happen, it could be also expressed in relative terms: high (severe problem), medium, low or with a multi-dimensional classification scheme.

- ✓ Hazard then outcome then risk.

- ✓ Any hospital should have a department for occupational health and environmental health. If you're a doctor, nurse or any worker in a hospital then you're at risk because you're in constant contact with patients.

- **Hazard Assessment/Hazard Analysis**:

- ✓ A process, in which individual hazards of the workplace are identified, assessed and controlled/eliminated as close to source (location of the hazard) as reasonable and possible.
  So, you need to be able to identify hazard sources (both experience and knowledge are required).
- ✓ As technology, resources, social expectation or regulatory requirements change, hazard analysis focuses controls more closely toward the source of the hazard. Thus hazard control is a dynamic program of prevention.

- ✓ Hazard-based programs also have the advantage of not assigning or implying there are "acceptable risks" in the workplace. They are used after the source is identified to help workers evade the risk. A hazard-based program may not be able to eliminate all risks, but neither does it accept "satisfactory" -- but still risky—outcomes. And as those who calculate and manage the risk are usually managers while those exposed to the risks are a different group, workers, a hazard-based approach can by-pass conflict inherent in a risk-based approach. Meaning that the one who's identifying the risks is not the same person who's being exposed to them (the manager will be identifying/determining the risks that others are exposed to).

- **Risk Assessment** :

- ✓ After hazard assessment comes risk assessment.

- ✓ 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:

1. Identify the hazards.
2. Identify all affected by the hazard and how. (number of affected persons)
3. Evaluate the risk.(percentage)
4. Identify and prioritize appropriate control measures.

- ✓ Example: You enter at a workplace, a big saw is used by workers for wood cutting, they push these wood logs towards the saw, so there's a probability that the worker falls upon the saw and injures himself because he slipped. Here, we need a certain cover on the saw to protect the worker.

▪ Identifying and prioritizing appropriate control measures:

- ✓ It's not reasonable to ask for costly means of protection (أساليب وقاية مكلفة) without giving priorities; because then, no one listens to you. We must identify the most hazardous source at first and then spend the money on it. The job is to lessen the hazard as much as we can to limit the possibility of having problems. If we were able to eliminate the hazard from the first place by hazard-based programs, we wouldn't have continued work in occupational health sector. And still, we have some workers losing their lives although we had done the appropriate job.

- ✓ The calculation of risk is based on the likelihood or probability of the harm being released and the severity of the consequences. This can be expressed mathematically as a quantitative assessment by assigning low, medium and high likelihood and severity with integers and multiplying them to obtain a risk factor, or qualitatively as a description of the circumstances by which the harm could arise.
- ✓ Qualitative by high medium and low assessment. Quantitative by percentage.

- ✓ The assessment should be recorded and reviewed periodically and whenever there is a significant change to work practices. This process doesn't occur in one day, multiple times should be taken since the place of machines or workers or techniques could change so, it's a continuous process (that's why we need somebody to stay in the work place to do this process)

▪ Practical Recommendations :

- ✓ The assessment should include practical recommendations to control the risk.
  Thus, the recommendation should be easily implemented by workers and affordable to pay by managers.

- ✓ Once recommended controls are implemented, the risk should be re-calculated to determine of 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 (if this happens, then you are doing good with the recommended controls).

- ✓ Example on the 2nd point: Masks are ordered for workers as a recommendation due to functional problems and after they are used, recalculation should be done in order to notice the change in hazards, if hazards weren't lowered; this means that what has been done isn't enough, so reevaluation is demanded (what is wrong about what we do in our society, is that we stop after recommendation, without doing any recalculations after recommendations).

- ✓ If the risk is severe, it should turn into moderate. If moderate, it should turn into low or acceptable. Otherwise, other controls are recommended to reach the desired level.

- ✓ **Note**: Most countries have these policies as an obligatory act. Although, some countries might not have these policies, but still, the companies & factories themselves apply such policies; because the loss of one worker

can cost more due to uncontrolled hazards. It depends on the country whether these policies are obligatory or facultative.

- ✓ Civil Defense (الدفاع المدني) is responsible for fire safety and construction safety when a factory is built.

- ✓ Example: Safeway (the mall) accident that occurred once during Christmas time. One of the workers put the extra goods on shelves on the fire exit door thinking this space is being unusable. And a flameless fire (smoke only, no flame) began near a huge doll. And since people couldn't find the fire exits, they started to crowd and the place became a death trap. After that, they found out that the civil defense law wasn't applied.

- ✓ Example: One of the buildings had an outdoor fire exit ladder which is obligatory to have in relation to law. After it was inspected, the owner took permission from the Ministry of Public Work to remove it because of their ugly look.

-Unapplied law-

*What civil defense looks for, when it comes to authorizing a factory to be launched, is that that factory has fire exits & fire distinguishers, that's all.

- ✓ In Jordan, a group of institutions send occupational health specialists for inspection:

1. Ministry of Work.
2. Ministry of Health.
3. SSC (Social Security Corporation).

- ✓ Each workplace has it's own source of hazards/ work place hazards, they might be: (unique to that work place) or sometimes they could be similar with others.
- ✓ Similar hazards: electricity.
- ✓ Unique hazards: patients in hospitals.

▪ Mechanical hazards:

- ✓ *By type of agent:*

1. Impact force. (Back to the mine example in China)
2. Confined Space. (causes claustrophobia)
3. Slips and trips.
4. Falling on a pointed object.(foot on a pin causes tetanus)
5. Compressed air /high pressure.
6. Entanglement. (stuck somewhere like in mountains)
7. Equipment-related injury.

- ✓ By type of damage: (the following words are medical terms)

1. Crushing.
2. Cutting
3. Friction and abrasion.
4. Stabbing and puncture.

Note: As a future physician, when writing a report about somebody who had an accident, it's recommended to use these words (medical words) - crushing, cutting, ...- and this report is usually taken to court so the incident should be accurately described. (التقرير الطبي ممكن ان يستخدم كتقرير قضائي)