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OCCUPATIONAL HEALTH OF HEALTH CARE WORKERS (HCW'S)

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With the provision of health services to individual's health care is involved, directly or indirectly. These services can occur in a variety of work settings, including out-patient surgery centers, birthing centers, hospitals, clinics, emergency medical care, dental offices, nursing homes and home healthcare. [1].

Healthcare workers include physicians, nurses, dental professionals and students, administrative staff, pharmacists, medical and nursing students, laboratory technicians, hospital volunteers, and emergency medical personnel [2].

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

- physical hazards, such as trips and falls, noise, radiation, slips;
- biological hazards, such as SARS, Hepatitis, TB, HIV/AIDS;
- chemical hazards, such as ethylene oxide, glutaraldehyde,
- psychosocial hazards, such as violence and stress;
- ergonomic hazards, such as heavy lifting;

- electrical hazards, such as frayed electrical cords.
- fire and explosion hazards, such as using oxygen, alcohol sanitizing gels.

Protection is needed to Health-care workers (HCWs) from these workplace hazards just as much as do mining or construction workers. Because their job is to care for the injured and sick, HCWs are often viewed as "immune" to illness or injury.

First their patients comes. For the sake of their patients they are often expected to sacrifice their own well-being. Indeed, health protecting health-care workers have added benefit to contributing to quality patient care and health system strengthening.

Some of the measures are used to protect patients from infections, such as protect health-care workers from injury, adequate staffing [3].



Fig.1 Health care workers without taking precautionary measures treating the patients [4]

A number of serious safety and health hazards are faced by Healthcare workers. These include biological hazards and blood borne pathogens, drug exposures and potential chemical, waste anesthetic gas exposures, ergonomic hazards from lifting and repetitive tasks, respiratory hazards, workplace violence, laser hazards, hazards associated with laboratories, x-ray hazards and radioactive material. Formaldehyde, used for preservation of specimens for pathology; ethylene oxide, glutaraldehyde, and paracetic acid used for sterilization; and numerous other chemicals used in healthcare laboratories are some of the potential chemical exposures.[1].

HCW'S IN DEVELOPING COUNTRIES

The International Labour Organization (ILO) estimates that the world's workforce suffer from work-related diseases such as musculoskeletal diseases and mental health problems are 160 million people, while 270 million fatal and non-fatal work-related accidents results in over 350,000 casualties and work-related deaths each year are over two million which are all attributable to occupational hazards [5]. The estimated occupational diseases worldwide is 217 million cases by World Health Organization (WHO) in their findings [6]. Many of these diseases are preventable as shown by evidence but issues like poor surveillance, under reporting, and various other factors have been known to influence occupational health hazards [7,8]. Although many developed countries have shown improvement in occupational health, however many developing countries do not give the priority to protection of workers from work-related disorders, partly because occupational health has been competed with several other health issues. This situation often make occupational health not prioritized due to the existence for long owing to various socio-economic, political challenges and cultural [9]. Occupational health and safety is a fundamental right in maintaining workers' well being which is neglected in developing countries [9,10].

Many workers are exposed to hazards which may be life threatening due to lack of adequate laws and policies regulating the work environment.

Occupational health and safety laws represent only about 10% of the population in omitting many major hazardous occupational & industries like the health sector in developing countries. Due to inadequate research occupational hazards are mostly under reported, it has revealed in sub-Saharan Africa and Asia with developing countries lacking the necessary expertise and resources to manage a lot of occupational injuries/diseases [10,11]. In developing countries it has been argued that medical waste management poses a very high risk to healthcare. This includes poor handling, sorting, collection, disposal of medical waste and segregation such as blood and body tissues, sharps and medical devices, [12]. A major challenge in developing countries is unsafe disposal of medical wastes as it contributes hugely to occupational injuries and diseases [12,13]. Moreover, Masumental found in developing countries the increase in occupational health hazards are largely blamed on Healthcare Workers (HCWs) not practicing universal safety precautions such as usage of Protective Personal Equipment (PPE) like wearing of gloves and the hand washing [12]. The risk of injuries and transmission of infections to HCWs is resulted due to this unsafe practice.

Occupational hazards in regards to the exposure to infectious blood borne pathogens including Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV) and events are among the most serious health in developing countries faced by HCWs [14-17]. These exposures affect the safety and well being of care providers as well the quality of care being delivered by HCWs. In developing countries majority of these occupational health hazards are known to occur but being reported are only 4% of these hazards with few research papers on occupational hazards affecting HCWs in developing countries [14,18].

INDIA SCENARIO

A health care work force of over 4.3 million serves a population of over 1.2 billion in India[19]. A CAGR of 16.5% is expected to record in the market during 2008-20. It is expected that the total industry size to touch US\$ 280 billion by 2020.

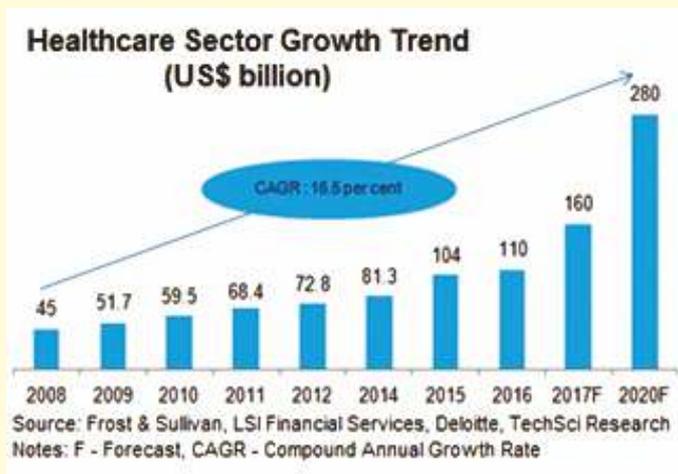


Fig 2. Healthcare sector growth trend [20]

In health care provision health care workers (HCWs) are involved at various levels ranging from tertiary to primary health services and community-based outreach services. The public sector Health care workers comprise a major part of this workforce. In India eighteen national health programs, with several state run health programs, exist in urban, rural, and tribal areas, a variety of workplace hazards are exposed to all actively involved public HCWs which include workplace hazards including physical, chemical biological, ergonomical, psychosocial radiological, safety hazards.

Studies have been documented on the prevalence of occupational related diseases in hospital-based HCWs including hepatitis C virus, tuberculosis, hepatitis B virus, occupational asthma, human immunodeficiency virus, and contact dermatitis, finding a linkage between disease prevalence and occupational hazards even though the health effects of occupational hazards are known, their prevalence in Indian public health care facilities are unknown. A major impediment to risk communication and risk management efforts is a lack of hazard recognition. Health care worker's diversity, present a challenge to the implementation of a uniform "risk management framework" in terms of education and exposure to hazards, which is coupled with severe resource constraints. To create awareness in recognizing occupational health hazards and to regulate and set standards to promote workplace safety and health, measuring the perception of HCWs regarding their exposure to workplace hazards is necessary.

Moreover, in India where severe shortage in human resources for health are projected, without enough support to recognize and manage occupational risk and consequent health impairments,

there are limited possibilities to meet the increasing challenges in health care delivery. The World Health Organization (WHO) in the 2007 World Health Assembly declared a global agenda for worker's health, which explicitly recognized the need for member countries to improve occupational health. It is also stipulated that for providing basic occupational health services for huge section of the nation's workforce public health care personnel may be key actors, especially the unorganized sector, micro- and small enterprises, for whom the public health systems provide the first line of medical support. Hence it is imperative that public HCWs are included in the management of their occupational risks for better management of basic occupational health risks for the general workforce.

The aim of this WHO India funded study was to profile occupational health hazards in public health facilities. We present the findings of self-reported exposure prevalence to certain occupational health hazards among HCWs, with a focus on psycho social hazards. These findings can inform policy interventions, assist in the development of tools to help HCWs recognize and understand occupational health issues, and to guide the implementation of workplace improvements [21].

HAZARDS

Physical Hazards

Musculoskeletal injury is the highest occupational risk for many HCW usually caused by moving and handling.

Lionizing radiation in therapeutic and diagnostic contexts, noise in boiler houses are included in other physical hazards.

Chemical Hazards

Various respiratory irritants, such as sulphur dioxide, glutaraldehyde, and acetic acid are released in association to the process of x-ray films. occupational asthma may be caused by some of the agents. Exposure can be considerably reduced and initiating them into the processor using a closed system. Unacceptably controlled glutaraldehyde in the cleaning of endoscopes, such as in bronchoscopy and gastroscopy, has been responsible for serious ill health is some of the nurses and other health care workers. In the causation of occupational asthma formaldehyde is implicated as another aldehyde.

Latex is one of the other important sensitizer observed in the health care settings. Severe Type I sensitization resulted by latex protein shows angioedema, urticaria and occupational asthma .

Chemical irritants, corrosives and poisons range from cleaning agents, to cytotoxics and other pharmaceuticals.

To reduce exposure control measures can and should be implemented. For example, Fig.3 (b) to remove gases and vapors the provision of local exhaust ventilation from the X-ray developing machine is shown.

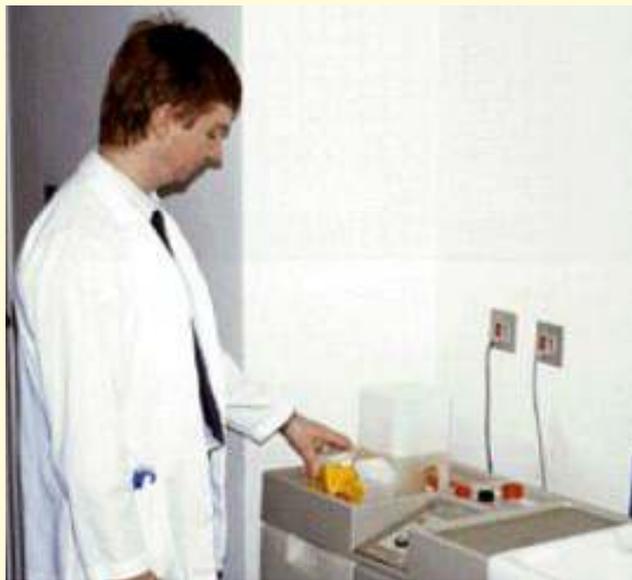


Fig.3(a) Radiographer on the X-ray machine (b) Local exhaust ventilation to remove gases and vapors.

Biological Hazards

HCW can be exposed to various biological hazards, mostly of an infective nature ranging from tuberculosis through to blood borne pathogens, such as Hepatitis B and HIV [22] Thus there are recommended certain vaccines for these workers as follows:

Table 1: Recommended Vaccines for Healthcare Workers [2]

Vaccines	Recommendations in brief
Hepatitis B	<p>If there is no documented evidence of a complete hepB vaccine series, or if there is no up-to-date blood test that shows you are immune to hepatitis B (i.e., no serologic evidence of immunity or prior vaccination) then you should</p> <ul style="list-style-type: none"> • get the 3-dose series (dose #1 now, #2 in 1 month, #3 approximately 5 months after #2). • Get anti-HBs serologic tested 1–2 months after dose #3.
Flu (Influenza)	Annually get 1 dose of influenza vaccine.
MMR (Measles, Mumps, & Rubella)	<p>If you were born in 1957 or later and have no record of having MMR vaccine, or if you have no an up-to-date blood test that shows you are immune to measles or mumps (i.e., no serologic evidence of immunity or prior vaccination), get 2 doses of MMR (1 dose now and the 2nd dose at least 28 days later). If you were born in 1957 or later and have not had the MMR vaccine, or if you don't have an up-to-date blood test that shows you are immune to rubella, only 1 dose of MMR is recommended. However, you may end up receiving 2 doses, because the rubella component is in the combination vaccine with measles and mumps.</p> <p>For HCWs born before 1957, see the MMRACIP vaccine recommendations.</p>
Varicella (Chickenpox)	<p>If you have not had chickenpox (varicella), if you haven't had varicella vaccine, or if you don't have an up-to-date blood test that shows you are immune to varicella (i.e., no serologic evidence of immunity or prior vaccination) get 2 doses of varicella vaccine, 4 weeks apart.</p>
Tdap (Tetanus, Diphtheria, Pertussis)	<p>Get a one-time dose of Tdap as soon as possible if you have not received Tdap previously (regardless of when previous dose of Td was received). Get Td boosters every 10 years thereafter.</p> <p>Pregnant HCWs need to get a dose of Tdap during each pregnancy.</p>
Meningococcal	<p>Those who are routinely exposed to isolates of <i>N. meningitidis</i> should get one dose.</p>

Psycho social Stress

Definition of stress has been in a number of ways and the range of techniques to manage stress is even wider still. Essentially what most people understand by 'stress' is a physiological or psychological response to external stressors that goes beyond what is accepted as normal. Moreover 'strain' would have been a better word and an analogy with a rubber band appropriate. A response produced by limited external stresses, a 'strain', which beyond a certain point becomes disproportionate and beyond the capability of the elastic properties of the subject.

There are two poles of attitude in regards to the prevention of occupational stress. To help coping with the stress one which often prevails is to focus on individual behavior by support and advice. The other is to identify situations which include potential stressors, assess the risks of stress, and then take steps to reduce the stressors so as to reduce the stress. On this latter approach Occupational health professionals should concentrate, and focus employers' and employees' attention. Although, this is not necessarily easy, mainly since stress is usually multifactorial.

Stressors in the workplace

Common adverse factors in the workplace leading to psychological breakdown include:

- A new or unreasonable boss
- Increased productivity targets
- Threat of redundancy
- Conflicts due to multiple responsibilities
- Too little or boring work
- New technology
- beyond capacity recent promotion
- Too many demands on time
- A tiring shift pattern, excess overtime
- bullying or sexual harassment
- High sickness absence in colleagues[23]

PRECAUTIONARY MEASURES FOR HEALTH CARE WORKERS

Take Precautions to Avoid Blood borne Pathogens

Health care workers are exposed to bloodborne pathogens as they often come in contact with patients' body fluids. In this case, through blood and other body fluids bacterial and viral infections

are transmitted. When a worker comes in contact with these fluids the risk for infection increases. Therefore, to avoid contamination healthcare workers should take necessary precautions and wear personal protective equipment. To keep body fluids off the worker's skin. Gowns, gloves, safety goggles and face shields be worn.

The health care facility/hospital must ensure proper management of exposures and kill/reduce the infection-causing micro-organisms inside the facility. Some of the best practices include:

- Hand hygiene practices
- Using disinfectant and antiseptics on skin before a surgical procedure or I.V. injection
- Decontamination and Cleaning of instruments

Immunization of workers who could be exposed must be done against hepatitis B, hepatitis C, and other blood borne or airborne pathogens.

Sharps Injuries -- Be Careful

Sharp objects like Scalpels, needles, etc used in medical facilities are mostly contaminated. Often health care workers come in contact with them. It is important to follow an appropriate disposal system for all sharps and infectious waste to avoid health hazards arising from them. Moreover, workers must be careful while handling these sharp items; as sharps injuries usually increase the risk of infectious diseases.

If possible, avoid the use of needles. Today, United States have reduced needle usage, in many hospitals and medical facilities using alternate routes through hands-free techniques. To reduce or eliminate risk of sharp injuries include disposing of syringes at the point of use in a safety box, no recapping of needles, using blunt suture needles and scalpel blades with rounded tips, passing sharp instruments in basins, using disposable gloves, etc.

Reduce Risk of Musculoskeletal Injuries-Use Proper devices

In medical professionals musculoskeletal injuries are common for those who have to lift immobile patients and/or transfer them between beds and wheelchairs. This leads those workers at risk for musculoskeletal disorders, which injure their bones, muscles, ligaments, nerves, joints, cartilage, tendons, or blood vessels in the back, limbs, neck or head.

Protection from musculoskeletal disorders and severe pains, can be achieved by using assistive devices such as slip sheets, slings, and electronic hoists whenever possible. If you don't have access to these devices, at least use the correct body mechanics for reducing the risk of injury; for example, keep your feet apart and knees bent when lifting an immobile patient.

Train Employees to be Safe against Chemical Hazards

Serious diseases may be caused in the healthcare industry by using some chemicals such as cancer, reproductive disorders, neurological diseases, asthma, and developmental disorders. These chemicals includes mercury, phthalates, bisphenol A, and triclosan. It is also observed that Medical workers can be exposed to chemotherapeutic agents and medications, which are in turn harmful and need to be handled properly.

According to OSHA, Employees should be trained by the medical facilities about how to handle hazardous substances safely. Moreover, all medical professionals must be equipped with the safety data sheets with details of composition of each chemical used in the facility and their potential dangers.

While handling hazardous chemicals usage of personal protective equipment should be mandatory for health care professionals.

Provide Fire Safety Training

Operating rooms are at the highest risk because they contain flammable gas and other materials such as oxygen, methane, hydrogen, nitrous oxide, plastic masks, antiseptic agents, and cloth drapes.

Medical facilities and hospitals should minimize the fire risk by taking proper precautions, such as using water-soluble materials for covering flammable parts of the body; preventing the buildup of nitrous oxide and oxygen; using fire-retardant surgical drapes, and keeping electrocautery tools in proper places. Healthcare workers in case of fire, need to follow the concept of RACE:

- Rescue anyone nearby
- Activate the fire alarm
- Contain the fire by closing doors and windows
- Extinguish the fire using a fire extinguisher

Regular fire drills are also necessary to employees. [24].

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EVENTS

“National Safety Day” on 4th March, 2017 to raise awareness about the importance of a safe and healthy work environment and awareness programme was conducted among the Foundry workers of Jagdish Foundries Pvt. Ltd, Naroda.



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