



Occupational Health and Safety Newsletter

Published by: College of Earth and Environmental Sciences (CEES) The University of Puanjab Lahore

Tomorrow is your reward

Vol : 02



Reward For Working

SAFE TODAY

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<https://web.facebook.com/occupationalhealthandsafety/>



Niaz Ahmad Akhtar
Vice-chancellor
University of the Punjab

"I am very pleased with the efforts of the College of Earth and Environmental Sciences, University of the Punjab in launching the M. Phil degree program in Occupational Health and Safety, first in Pakistan, at University of the Punjab.

The publication of "OHS Newsletter" by CEES OHS students is a positive contribution to the society to highlight the crucial OHS issues such as, occupational diseases, ergonomic hazards and worker's injuries in the industrial and government sector. This effort will create awareness among workers and the community about such issues.

No one can deny the fact that workers injuries and occupational diseases in various industrial sectors are taking heavy toll, not only of workers but also of their families, as well as industrial productivity. The industrial growth is also causing the worst effect on humans and environment in the adjacent areas of various industries due to dumping of their waste products directly in to environment, which is directly affecting health of people and degradation of local environment. This effort of CEES will highlight health and safety issues and environmental health effects and will create awareness and suggest possible remedies to address them. In addition, the CEES faculty and students will be involved in research and training in partnership with various stake holders to create awareness for the protection of workers and environment."

Dr. Sajid Rashid Ahmad
Principal CEES
University of the Punjab



"I am very pleased with the efforts of the Occupational Health and Safety faculty and students at the College of Earth and Environmental Sciences, University of the Punjab in launching the "OHS Newsletter" to highlight the important issues faced by workers and public such as, heat related sickness and preventive measures, occupational health and safety problems faced by welders, and proper use of personal protective equipment during various tasks.

Recently, the Punjab government has taken initiative on this front by passing the Occupational Safety and Health Act 2019, which covers all those areas which were neglected in the British era OSH Act of 1934. To realize the need for well-educated and trained occupational health and safety professionals, CEES has launched a two year M. Phil degree in Occupational Health and Safety, first in the nation, to produce well educated technical professionals in this discipline for the public and private sector as well as to create a liaison between academia and industry and to highlight the importance of such issues and suggest possible remedies to address them."

OCCUPATIONAL HEALTH AND SAFETY PROGRAM COLLEGE OF EARTH AND ENVIRONMENTAL SCIENCES



Dr. Muhammad Akram



Dr. Azhar Ali

The Occupational safety and health (OSH), commonly called as health, safety, and environment (HSE) or workplace health and safety (WHS), is a multidisciplinary program concerned with the safety, health, and welfare of people at work and beyond. People trained in this discipline are qualified in evaluating, identifying, and controlling chemical, biological, and physical hazards, which affects health, safety, and productivity of workforce. The College of Earth and Environmental Sciences (CEES), University of the Punjab, has initiated such a multidisciplinary program suitable for people with different educational background and experience. Various programs offered at CEES are:

M. PHIL IN OHS:

It is a multidisciplinary two-year degree program incorporate many areas of health, safety and environment, such as industrial hygiene, occupational health and safety, ergonomics, fire safety and emergency preparedness, noise and hearing conservation, hazardous waste management, construction, oil & gas, etc. It is intended to prepare students in many aspects of HSE to serve in the public and private sector. The program will operate within an international OHS frame work of education and research.

POST GRADUATE DIPLOMA (PGD) IN OHS:

This one-year program will provide in depth knowledge to prepare students to become competent and demonstrate skillfulness in various occupational health and safety disciplines, such as health, safety and environment, industrial hygiene and safety management, chemical hazards, fire safety and emergency preparedness, regulations, noise and hearing conservation, personal protection equipment (PPE), etc. This will provide essential, broad-based education in HSE to prepare academically sound graduates for entry-level and advanced positions in the HSE profession.

CERTIFICATE IN OHS AS SAFETY PRACTITIONER:

The Certificate in OHS will provide basic knowledge in various health and safety areas to prepare students who either are employees in small scale public or private enterprises or wants to add on responsibilities in HSE at their work site. The program consists of four Modules, one month each, which can be taken individually or completed in 4 months, covering areas described under PGD. The classes will be held mostly in evenings or weekends to accommodate people working during the day.

CONTINUING EDUCATION COURSES IN OHS:

To facilitate learning in occupational health, safety and environment discipline for people who have HSE education or work in this discipline but wants to enhance their knowledge in a certain specific area, such as confined space entry & permit requirements, electrical safety, lock-out/tag-out, respiratory protection, food safety, ladder safety, welding safety, housekeeping, chemical safety, biosafety, waste management, First Aid & CPR, fire safety, ergonomics, regulatory compliance and standards, etc.

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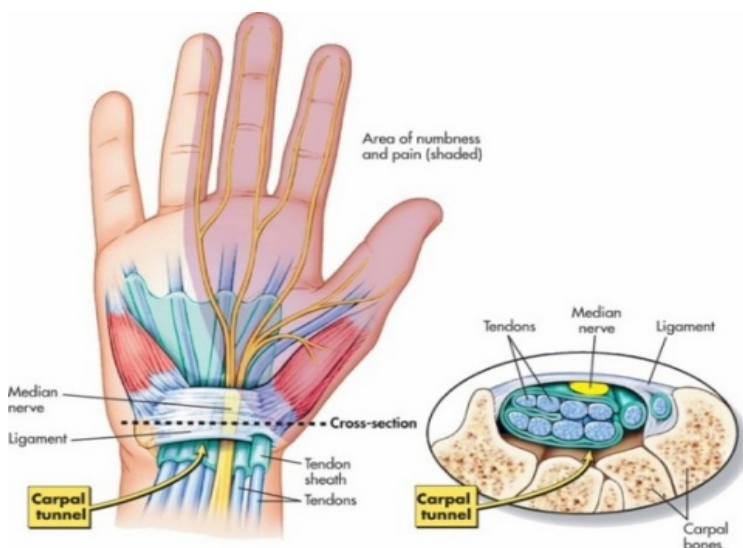
COMPUTER ERGONOMICS

Computers or display screen equipments are an integral part of our work and now used routinely for various tasks. Many people spend hours a day in front of a computer without considering the bad impact on their bodies. People physically stress their bodies daily without realizing it by extending their wrists, slouching, sitting without foot support and straining to look at poorly placed monitors or display screen equipment, these can eventually lead to a disability. Anyone who uses a computer for prolonged periods is at risk.

Computer Ergonomics addresses ways to optimize your computer workstation to reduce the specific risks of injuries & disorders such as:

- Tendonitis
- Tenosynovitis
- Trigger Finger
- Epicondylitis
- Thoracic Outlet Syndrome
- Carpal Tunnel Syndrome
- Spinal & Back injuries
- Repetitive Stress Injuries (RSIs)
- Musculoskeletal Disorders (MSDs)
- Cumulative Trauma Disorders (CTDs)

Ergonomics puts people first, taking account of their capabilities and limitations. Ergonomics aims to make sure that tasks, equipment, information and the environment suit each worker.



“Ergonomics is a science concerned with the ‘fit’ between people and their work.”

Ergonomic injuries or MSDs can affect the muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs. These can be directly or indirectly related to job duties or the work environment. Non-work activities and environments can also cause MSDs.

Signs and Symptoms of an Ergonomic Injury:

- Pain in the fingers, wrists, or other parts of the body: may include a dull aching pain, a sharp stabbing pain, or even a burning sensation
- Tingling or numbness, particularly in the hands or fingers
- Swelling, inflammation, or joint stiffness
- Discomfort, pain or weakness in the shoulders, neck, or upper or lower back
- Extremities turning white or feeling unusually cold
- General feeling of muscle tightness, cramping, or discomfort
- Clumsiness or loss of coordination
- Discomfort when making certain movements



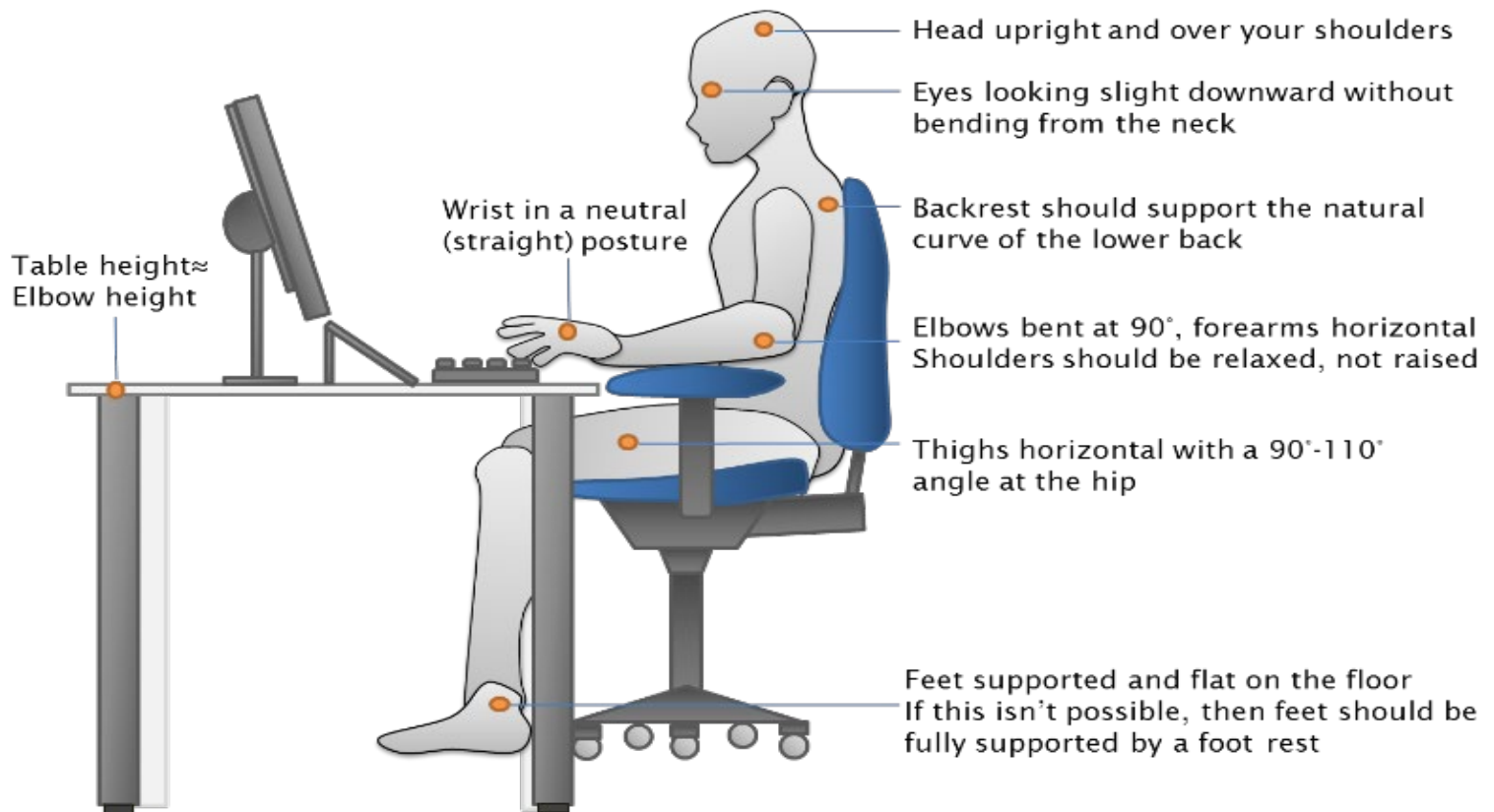
“Listen to your body’s whispers before these become screams!”

Risk Factors:

- Repetition (key punching)
- Forceful Exertion
- Direct Mechanical Pressure on wrist
- Static Posture
- Inadequate Recovery Time
- Awkward Posture
- Environmental Stressors

Adjust Laptops: Laptop computers are not ergonomically designed for prolonged use. The monitor and keyboard are so close together that they cannot both be in good positions at the same time. For prolonged use, it's best to add a separate mouse and keyboard. The laptop can be placed on books so the top of the screen is at eye level, then use an external keyboard so that your elbows can rest above 90° by your side. Laptop emits heat while at work. Prolonged use & extreme heat may develop “Toasted Skin Syndrome”. Heat exposure can be prevented by using cooling pads under laptops.

COMPUTER ERGONOMICS



Ergonomics is not the problem - it is the Solution!

10 tips for an Ergonomic Computer Workstation:

1. Use chair fully adjustable with lumbar support.
2. Place monitor 18"-24" away and top of monitor must be at eye level.
3. No glare on screen, use anti-glare filters if necessary
4. Make sure wrists, forearms & hands are straight to use keyboard & mouse
5. Elbow close to body at a 90° angle
6. Head, back, chin tucked, ears, shoulders & hips aligned
7. Clear under table space to rest legs comfortably
8. Use stable footrest or place feet on floor
9. Keep the objects in frequent use within your reach
10. Take frequent short breaks

Benefits of Ergonomics:

- Reduce injuries & illnesses
- Improves productivity
- Reduces costs
- Improves quality of life
- Improves employee performance
- Creates a better safety culture

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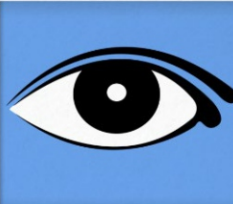
THE 20-20-20 RULE Reducing the effects of Computer Vision Syndrome



EVERY
20 MINUTES...



...TAKE A BREAK
FOR 20 SECONDS...



...AND LOOK AT AN
OBJECT 20 FEET AWAY.

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HEALTH RISK - SOLID WASTE MANAGEMENT DURING COVID-19 PANDEMIC

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INTRODUCTION

Protection of human health and the environment is one of the major challenges facing developing as well as developed countries of the world. During Covid-19 pandemic the responsibility of janitorial worker has been increase for provision of hygienic conditions in the health care facilities like hospital and laboratories. Improper handling and lack of facilities for waste collection and treatment leads to serious health risks to waste collector, health care staff and the community. It is very important to ensure health safety personal protective equipment's for the safety of workers and provision of best facilities for waste treatment and disposal.

Categories of solid waste

Biomedical waste is categories as hazardous and non-hazardous waste. The hazardous waste is including, infectious waste, covid -19 kits, pathological waste, chemical waste, sharp waste, radioactive waste and pharmaceutical waste. While plastic water bottles, paper, food waste, and food packaging are considered non-hazardous healthcare solid waste.

Infectious Waste: Infectious waste that contains infective pathogens, includes blood and body fluids, human excreta, laboratory cultures, covid-19 testing kits and microbiological products etc.

Sharps waste: it is composed of used 'sharps' including used or unused hypodermic, intravenous, or other needles etc.

Non-hazardous waste: These are the used plastic water bottles, office paper, food waste, and food packaging

DIFFERENT STEPS OF WASTE PROCESS

Minimizing waste: Waste minimization can be done at generations point; however, it can also occur before the entry of items into a healthcare facility. Some good ways are waste reduction practice include select the material with minimum packaging. But the COVID -19 testing kits are used only once after that it should be discarded in designated bin. During removing bin waste high risk to get affected from COVID – 19 which causes an acute respiratory disease.

Waste Segregation: Waste segregation can significantly reduce the amount of healthcare waste that needs special treatment. When segregation is don't do and all kind of waste thrown in the single bin it's big problem for worker to segregate contaminated waste and higher risk to be infected from infectious waste. It recommended waste should be separated when and where it is generated, such as before going to a patient's room, operation theater, examination room, or laboratory. employees should discard the waste in appropriate containers or bin. Separate the waste by working on a three-bin system use clearly labeled waste containers. Which is the easiest way for the waste worker for its handling

Waste collection, transportation and storage

After separating waste, designated waste worker collect and transport each ward or unit for disposal or transport to a prescribed area.

Collection: At the stage of collection of infectious waste high risk to be get affected. Waste collection is a direct contact process, to deal with hazardous or infectious waste, always wear PPE's which should include face shield or mask (N-95) Utility gloves, a heavy-duty apron and the shoes.

Transportation and Storage: The use of separate equipment, such as a cart or wheelbarrow, to transport hazardous and non-hazardous waste separately, the dedicated waste workers team should be deployed to; load and unload, it has no sharp edges that can tear bag, easy to clean the cart, clearly labeled the waste bag. If bag is contaminated from outside or ruptured, higher chance to be get affected while transportation of infectious waste to designated disposal. A person who experiences one needle stick injury from a needle used on an infected source patient has risks of 30%, 1.8%, and 0.3% respectively of becoming infected with HBV, HCV and HIV.

Store waste until its transported to offsite. When making an operating plan, consider the amount of waste produced daily, the needs of waste management staff, the site of storage areas, and final disposal method.

Possible Waste Treatment and Disposal Methods

The World Health Organization (WHO) estimates that each year there are about 8 to 16 million new cases of Hepatitis B virus, 2.3–4.7 million cases of Hepatitis C virus and 80,000–160,000 cases of Human Immunodeficiency Virus (HIV) due to unsafe injections disposal and mostly due to very poor waste management systems. The disposal method depends on how it has been treated, as well as the type of quantity of waste, the space available onsite and possible available disposal options. Disposal methods are Thermal (Incineration), Chemical, Mechanical, Radiation, Biological Method.

Conclusions

As the testing capacity is increasing, volume of biomedical waste is also increasing greatly, due to high infection rate of the novel COVID-19 virus. The viral contaminated waste may infect waste collector in the waste management sector due to their direct exposure to waste. Therefore, ensuring waste management system and provision of proper PPE's can add value for the prevention of COVID-19 spread. Risk can be determined by Risk Score (Severity*Probity=T)

Risk Rating	Range
Significant Impact	20-25
High	15-19
Medium	09--14
Low	1--8
Undefined	0

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BIOSAFETY AND RISK GROUPS IN MICROBIOLOGICAL LABORATORY

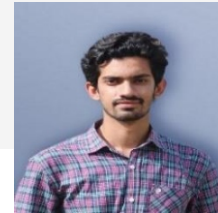
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Principles, Practices and Techniques for Biosafety

A fundamental objective of any biosafety program is the containment of potentially harmful biological agents. The term “containment” is used in describing safe methods, facilities and equipment for managing infectious materials in the laboratory environment where they are being handled or maintained. Individuals who deal with infectious agents must be aware of possible dangers and trained for properly handling such material. The laboratory's director is responsible for providing adequate employee training. Personnel should be informed of potential dangers and be expected to read all applicable practices and procedures. Concerning risk assessment, this individual should contact biosafety or other health and safety specialists.

Safety Equipment (Barriers and Personal Protective Equipment)

Safety equipment includes BSCs, enclosed containers, and other engineering controls designed to remove or minimize exposures to hazardous biological materials. The BSC is the principal device used to provide containment of infectious droplets or aerosols generated by many microbiological procedures.

Primary Barriers

- ✓ Open-fronted Class I and Class II BSCs are primary barriers that offer significant levels of protection to laboratory personnel and to the environment
- ✓ The Class II biological safety cabinet also provides protection from external contamination of the materials (e.g., cell cultures, microbiological stocks)
- ✓ The gas-tight Class III biological safety cabinet provides the highest attainable level of protection to personnel and the environment
- ✓ A safety centrifuge cup, an enclosed container designed to prevent aerosols from being released during centrifugation

Secondary Barriers

- ✓ The recommended secondary barrier(s) will depend on the risk of transmission of specific agents. For example, the exposure risks for most laboratory work in BSL-1 and BSL-2 facilities will be direct contact with the agents, or inadvertent contact exposures through contaminated work environments

Personal Protective Equipment

- ✓ Personal protective equipment includes items for, such as gloves, coats, gowns, shoe covers, boots, respirators, face shields, safety glasses, or goggles
- ✓ They often used in combination with BSCs and other devices that contain the agents, animals, or materials being handled

Table 1: Classification of Infective Microorganisms by Risk Group to biosafety levels, practices, and equipment (WHO Manual on Biosafety, 2004)

Sr. No.	Risk Group	Biosafety Level	Laboratory type	Laboratory practices	Safety Equipment
1	A microorganism that is unlikely to cause human or animal disease.	Basic-in Biosafety Level 1	Basic teaching, research	Good microbiological techniques (GMT)	None; open bench work
2	A pathogen that can cause human or animal disease but is unlikely to be a serious	Basic-in Biosafety Level 2	Primary health services; diagnostic services, research	GMT plus protective clothing, biohazard sign	Open bench plus biological safety cabinet (BSC) for potential aerosols
3	A pathogen that usually causes serious human or animal disease but does not usually spread to others	Basic-in Biosafety Level 3	Special diagnostic services, research	Level 2 plus special clothing, controlled access, directional airflow	BSC and/or other primary devices for all activities
4	A pathogen that usually causes serious human or animal disease and that can be readily transmitted to others	Basic-in Biosafety Level 4	Dangerous pathogen units	Level 3 plus airlock entry, shower exit, special waste disposal	Class III BSC, or positive pressure suits in conjunction with Class II BSCs, double-ended autoclave (through the wall), filtered air

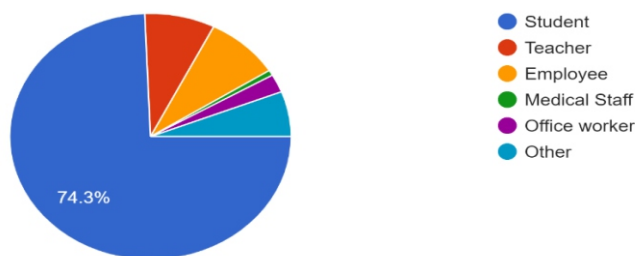
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Assessment of Human and Ergonomic factors of work from home during COVID-19 in Pakistan

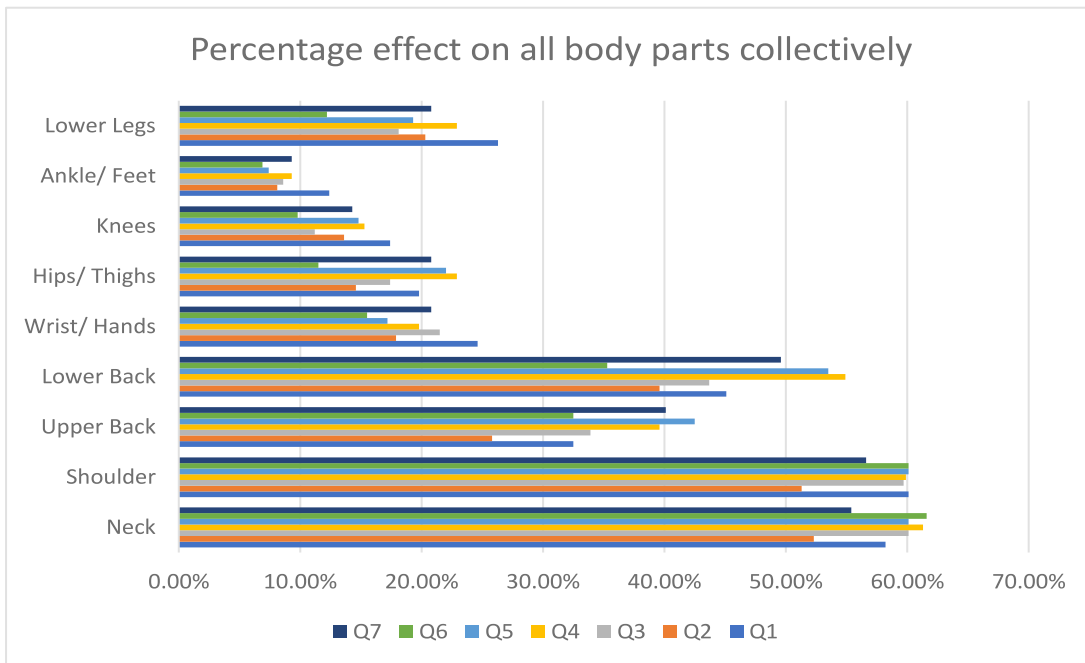
According to the recommendation of the World Health Organization, to prevent the transmission of COVID-19, the initial step taken was the complete lockdown ([WHO] World Health Organization 2020). Almost 60% of the world population was pushed indoors to control and stop the coronavirus from being spreading and this proved to be helpful to some extent but on the other hand, it also caused many problems like economic loss, the stress of unemployment, psychological traumas, etc. (Suresh.G, 2020). When the first confirmed case of COVID-19 was reported in Pakistan on February 26, 2020, the World Health Organization recommended the Pakistani government and officials imposed a countrywide lockdown to stop the transmission of disease.

The study aims to evaluate and compare human and ergonomic factors at the time of COVID-19 during 6-month lockdown in Pakistan. It is reported in literature that, during work from home the lifestyle of people was transformed to less physical activity. Environmental exposure was rather less but people were exposed more to occupational activities including while using computer-based technologies and mobile phones. Therefore, their physical and mental health were greatly impacted. The current research was conducted through online surveys using Nordic Musculoskeletal Questionnaire (NMQ) for musculoskeletal disorders (MSDs), Jenkin's Sleep scale (JSS-T) for assessing sleep quality, COVID-19 Phobia scale (C19P-S) for the effects on mental health and fear of COVID 19. Initially, the sample size was selected 500, but it was reduced to 421 due less to individual responses. The age group of individuals in this was selected from 16 to 57 years. It comprised of six groups: Students (74.3%), Teachers (8.1%), Office staff (2.4%), Employees (8.6%), Medical Staff (0.7%) and Others (5.9%).



Data analysis was performed statistically using excel and SPSS (26.0). The results revealed that various Ergonomics and physical health issues occurred due to improper workstation, inappropriate body posture and increased screen time while working at home. People used to be afraid of losing their families, their loved ones and their social and economic status which affected their mental health badly causing depression, anxiety, insomnia, hypertension, and PTSD etc. Screen time was increased from 2 hours to more than 8 hours ($p= 0.00<0.05$). The most affected body parts were 58.42% neck, 58.25%

shoulders, 35.27% upper back, 45.95% lower back, 19.6% wrist/hands, 18.42% hips/thighs, 13.48% knees, 8.8% ankles/feet, and 19.98% lower legs.

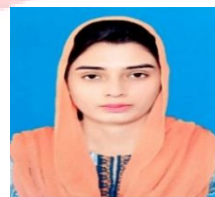


58.9% responded that they Lack proper workstation at home, 75.1% people were not aware of proper body posture while working or studying at home leads to the MSDs, pain and discomfort in various body parts and effect on eyes. The study recommends that international guidelines according to Global Ergonomics Standards and OSHA for appropriate workstation, proper lightning, specific adjustment of computer, laptop, and mobile screen from eye level. Guidelines and exercises about workstation ergonomics should be provided by experts. Seek medical assistance in case of any discomfort to avoid long term health issues.

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Activities

Organized Tree Plantation Campaign (seminar and walk in Qaid-e-Azam Campus University of the Punjab,Lahore.

Participated in a Seminar on Rain Water in College of Earth and Environmental Sciences, PU, Lahore.

Organized a webinar on Plastic Pollution in our department.

Conducted a Webinar on Climate Change and its effect on human health by CEES, Punjab University, Lahore.

Social services by Department Students at collage of Earth and Environmental Sciences,.

Class Tours: (Industrial)

Lab Works



Up Coming Events

3rd International Conference on Earth and Environmental Sciences (November)
Pre/Post seminar on Associate Safety Professional (ASP) Certification (November)
Rescue 1122 Training (Basic Life Support Course) Coming soon
Guest Lectures

Note: If anyone want to put his/her article in this Newsletter, contact at

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Design & Edited by: Muhammad Umair Rasheed & Mazhar Sultan