COLLEGE OF GENERAL PRACTITIONERS OF SRI LANKA

Print CPD Programme
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OCCUPATIONAL HEALTH

By

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* An image of the international day of workers

Workplace Illness

262 deaths every Hour, 6300 deaths every Day take place worldwide in occupation related accidents!

That is not all. 217 million new cases of work related disease occur each year. 30 to 40% of these become chronic and 10% develop permanent work disability. Those killed at work or falling ill as result of work outnumber those from road accidents, war or AIDS.

"To Love one's occupation is to be happy-but where are the occupations one can love?"

Ramazzini 1713
Father of Occupational Medicine

Work itself is life enhancing and promotes health but we must be conscious that bad working conditions can give rise to injury, illness, aggravation of existing illnesses and reduced work efficiency. Some occupational illnesses like deafness are not treatable and only prevention is possible.

GPs ARE KEY TO A HEALTHY WORKFORCE

GPs are usually the point of first contact when workers fall ill. In fact many GPs double up as company medical officers in between practice sessions. So, illnesses and symptoms that occur due to or during work are very much the business of the general practitioner. What is more GPs in their role as company MOs are often called upon to carry out both pre-employment and regular medical examinations of various categories of employees. Please keep in mind that housewives or home makers who are the back bone of any nation also fall ill in the course of their work and have to seek help from their GPs.

This print CPD lesson will cover the following areas;

1. IMPORTANCE OF THE HISTORY

The history is crucial. That is history. Matters of history are not only important for diagnosis and management of occupational illness but also for pre-employment and periodical assessments of the work force.

- A good history enables an early diagnosis and treatment of an illness having an occupational origin. E.g. Bronchial Asthma due to workplace dust or fumes in electronic industries.
  Cancer of nasal sinuses due to wood work.
  Silicosis due work in porcelain or in cement production.
  Upper back pain from computer work.
  Lower back ache from lifting weights.
- Since removal of occupational cause is sometimes the only possible treatment (eg Noise), a proper history is virtually curative .
- Often a long period may have lapsed between exposure to hazard and the development of an occupational illness. Here too the history taken adequately will give the GP a clue.
  e.g Asbestos Cancers 15 to 25 years after exposure
  Liver cancers years after exposure to solvents long after the cessation of employment.

Two Key questions to ask patients:-

1. **What type of work are you doing?**
   This includes further questions on time spent, posture, work done at home and hobbies.
2. **What type of work have you been doing in the past?**
   Inquire about exposure to physical conditions like heat, noise, lifting weights, chemicals, biological agents and abnormal postures. Also inquire about work stress.

2. Common workplace illnesses

a. Occupational hazards of computer use

Persons of all ages and in 75% of all jobs, large numbers of students, teachers, executives, clerks and some manual workers use computers. Many persons today present with computer related symptoms such as,

(1) Shoulder , neck and back pain, headache and tiredness
(2) Repetitive Stress Injury (RSI) of wrist and fingers (again pain, swelling, stiffness and numbness)
(3) Computer vision syndrome
i.e. eye discomfort , blurred vision, headache and neck pain

All treated by attention to prevention and using simple analgesics.

For prevention and treatment of Work Related Musculo-Skeletal related Disorders (WMRD) in (1) above the most important is posture.

- Use a high back chair, resting the shoulders on it, and not crouching or hunching towards the computer screen. (Fig 1) Preferably it should be an ergonomic chair designed to help the spine to hold its natural curvature while sitting.
- Sit in the most comfortable posture to reduce tiredness. The sitting angle should be around 104° so that the weight on the lumbar spine is minimized. Feet should rest flat on the floor or use a footstool. Do not be in sitting position for too long, walk if needed.
- Eye should be at a level in line with the top of the monitor (screen) and at a distance of 45-60 cms
- The keyboard height should be such as to allow the elbows to rest comfortably at the sides at an angle of around 94° with the forearms roughly parallel to the floor.

For prevention and treatment of Repetitive Stress Injury (Overuse Injuries) of wrist, fingers, thumb and elbows again it is proper positioning

- Rest the ball of the hand on the table when operating the keyboard and type lightly.
- Position the mouse as close as possible to the side of the keyboard.
- Use your whole arm, not just your wrist when using the mouse.
- Have a short break every 20 minutes and avoid uninterrupted stretches of computer use. Good keyboard technique is important.
- When Carpal Tunnel Syndrome occurs in the wrist, use a splint extending from above the wrist to below the metarcarpo-phalangeal joint first for about a month before considering physiotherapy/hot water, steroid or surgery. Note RSI occurs in about 1 in 8 computer users.

Prevention and treatment of Computer Vision Syndrome

- Prevent reflections of window or other glare or reflections on the screen.
- Adjust the viewing distance to fit individual visual needs.
- Reduce any flicker on the screen, sharpen the letters to individual visual needs and have a good contrast with the background.
- Bright light in the peripheral field can lead to eye discomfort and fatigue.

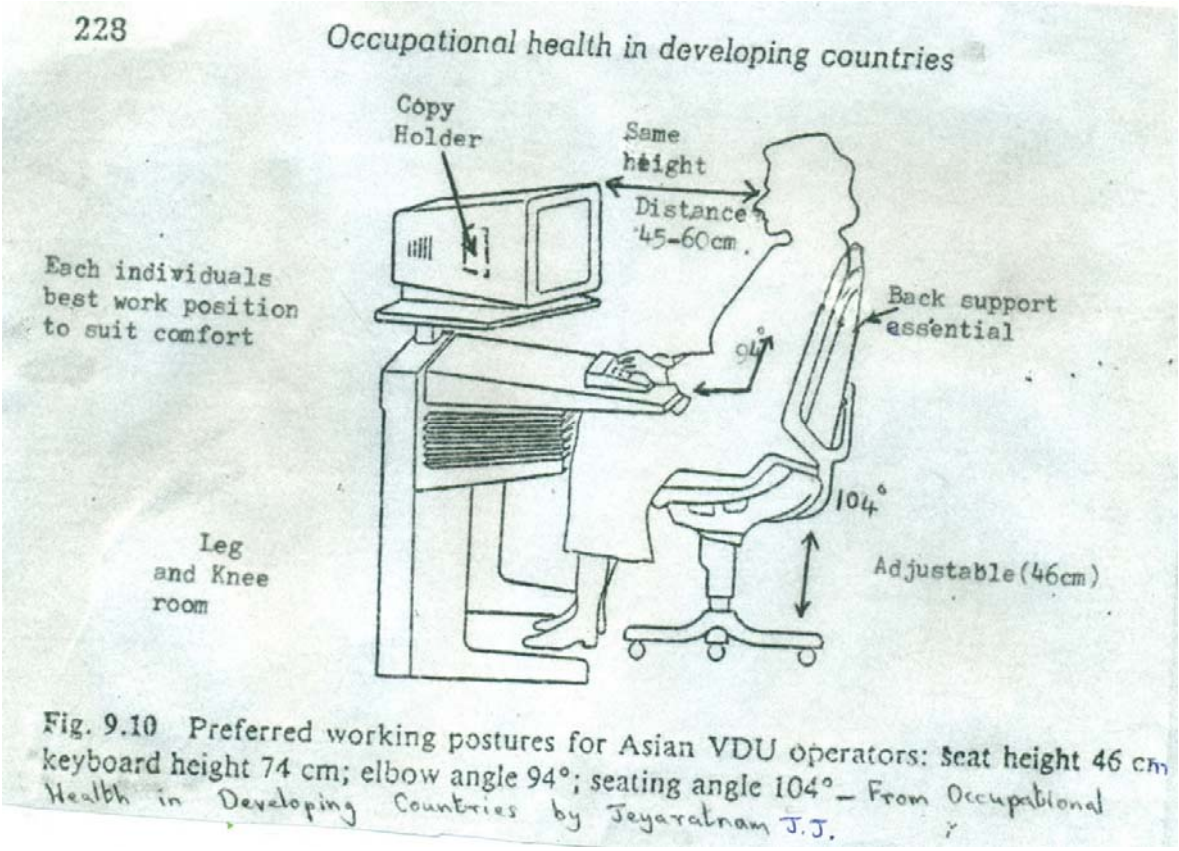


Fig. 9.10 Preferred working postures for Asian VDU operators: seat height 46 cm keyboard height 74 cm; elbow angle 94°; seating angle 104°– From Occupational Health in Developing Countries by Jeyaratnam J.J.

- Have short, frequent breaks or look at distant objects every 20 minutes.
- Uncorrected distance vision, inadequate near vision, non correction of visual factors for computer use and astigmatism could be contributory factors for computer vision syndrome. An ophthalmological work up may be indicated.
- Clean the computer screen regularly to prevent electrostatic charge effects on eye and skin

Note: WHO has proved that computer health effects are not permanent on the eye, skin and reproductive system. However due to the demands on computer operators (not computers themselves) there could be mental stress and other symptoms attributed to computers .These fears need to be allayed by GPs.

b. Low Back Pain (LBP)

LBP is the commonest symptom amongst persons of adult working age, and yet the most difficult to manage on evidence based medicine due to contrary results in surveys. Some 60-80% adults experience LBP at sometime in their working life, often persistent or recurrent. It is the commonest health reason given for work loss or absence. It is a most disabling condition in ward nurses in some cultures. It occurs often in young or middle aged labourers involved in heavy work but also in older executives and others sitting for long periods using

chairs with poor ergonomic design that do not fit their spines. (Imported ‘comfort’ chairs are designed for European sized backs!)

There is much evidence to show that LBP depends on individual and work related issues than on physical or clinical features, and there is little evidence of tissue damage except in the case of LBP with sciatica.

Treatment:-

Most cases of LBP (without radiating down the leg or numbness) could be managed with a few days of bed rest on a hard mattress or mat on the floor, NSAIDs, Diazapam or Tizanidine for the night, Magnesium chelate 500mg daily (if you can get it) and then return to work on light duty for about a week without heavy lifting or standing for long periods. Once the pain subsides it would be prudent to teach them erector spinae strengthening exercises

Fig 2 eg. Arching the back 10 times bd whilst flat face down on the floor daily for life and stretching exercises of muscles of the back of leg and thigh eg. Rest hands stretched on the wall keep one knee bent and stretch the other leg to the maximum extent.(fig 3)

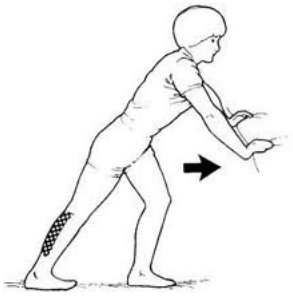


Fig 2 Erector Spinae Exercise **fig 3** Stretching leg muscles

Most patients recover¸ but there is a great possibility of recurrence and hence the need for doing the back exercises for life and continuing high doses of Magnesium for about a month is recommended. Reduction of weight is very important, but there is no evidence that physical fitness programmes reduce LBP. My personal experience is that it is beneficial. In the workplace setting, OH doctors can advice the management to improve the safety culture. Ergonomic solutions and resolving psycho-social issues have a great impact in reducing LBP and work loss.

Those having LBP with a spread down the back of a leg or numbness or pain anywhere from back to toe, particularly in those above 50 years of age (who have more severe and prolonged symptoms and greater recurrence) need to have immediate investigations such as x-ray lumbar spine (PA and Lateral) and MRI and if necessary have orthopedic and neuro surgical referrals.

LBP is so common that all working persons (including housewives and gardeners) should be taught the correct lifting technique. (fig 4) Always bend the knee when picking up or lifting anything from the floor or when pushing (even if the weight is minimal). When lifting a heavy object- bend both knees keeping the back straight and as vertical as possible. Take the object as close as possible to the body, then stand up and walk away. The weight is then taken by the arms rather than by the spine.

All LBP patients need good footwear (though expensive) and those who can not afford should wear 'Flip flop' slippers. Proper footwear has been found to be greatly beneficial in reducing LBP.

In summary, prevention and treatment of LBP involves:

- Strengthening back muscles,
- Training in lifting techniques,
- NSAIDs and muscle relaxants like Magnesium,
- Reduce body weight,
- Maintain a good sitting posture,
- And if prolonged standing is required shift the weight from one leg to the other,
- If possible wear lumbar support and proper footwear.

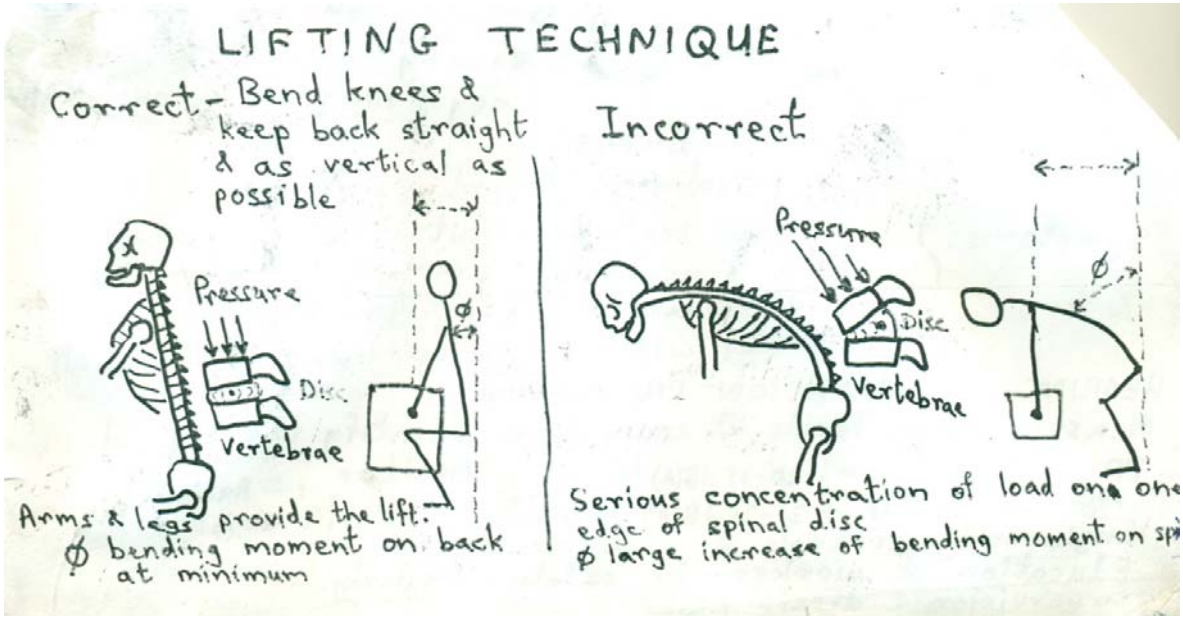


Fig 4

c. Occupational Deafness (SNHL, NIHL)

Noise induced Sensory Neural Hearing Loss (SNHL) or Noise induced Hearing Loss is the most widespread industrial disease if exposed continuously or intermittently to noise.

33% in the USA, 74% in the Philippines, 40% in Singapore, and 15% in Hong Kong of workers have been affected. Since there is no treatment, GPs need to advise their patients and the management when visiting noisy worksites on preventing SNHL. If during a work place visit one cannot hear what a companion is saying, then SNHL is likely to occur among the workers in that work place.

In the early stages the hearing loss is hardly recognizable. Wanting to increase the volume of the radio or TV over the needs of the family, inability to have a conversation in the background of a noisy environment are pointers. Continuous or intermittent workplace noise over 85 decibels (dBA) will result in permanent deafness in 99% of those exposed. Continuous exposure over an 8 hour day is more damaging than when interrupted to allow a rest for the ear. Hence the **key in treatment is prevention.**

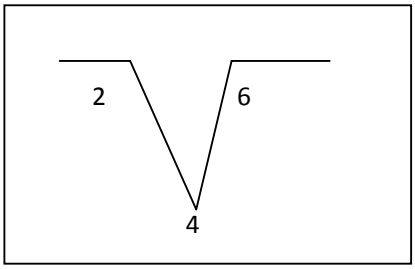
Noisy workplaces where workers are exposed to noise over 90 dBA include:-

Factories with fast moving parts , older power generators, construction sites, carpentry, fibre-glass, bottling and canning, grinders, discos and rock concerts, ground maintenance at airports , and rock blasting (quarries). NIHL occurrence will depend on individual genetic susceptibility, noise intensity, high frequency noise for over 3 hours, duration of exposure, and whether the noise is intermittent, continuous and of single very loud impulse (This last is called occupational acoustic trauma rather than NIHL which usual develops slowly and bilaterally over several years)

The **symptoms of NIHL** are increasing deafness, tinnitus, headache, irritability, increasing errors and accidents, poor performance at work, sleep disorders, fatigue, decreasing sexual performance, mood changes, depression and hypertension. The deafness is typically bilateral and increases rapidly in the first 10 years of exposure. The present evidence is that NIHL does not progress after noise exposure ceases. NIHL is aggravated by ototoxic agents at the workplace such as solvents (eg. Styrene, toluene, xylene, benzene based products, aniline dyes, hexane, trichloroethylene, heavy alcohols) and metals (lead, mercury and tin), various pharmacological agents (eg. Aminoglycosides, diuretics, salycilates, antineoplastic agents, and therapeutic radiations)

The diagnosis of NIHL is by pure tone audiogram (can be done at the Audiology Centre of the Deaf School, Ratmalana tele 2582097, or Deaf Centre ,Baththaramulla.

Those tests done without sound proof rooms are questionable. The main sign is ‘notching at high frequencies of 3000, 4000 or 6000 Hz with recovery at 8000 Hz. (It used to be called ‘The 4kHz dip ’).



Later the 'notch' extends to 500, 1000 to 8000 Hz. This notch is seen bilaterally. Air conduction is better than bone conduction (Can be done with the tuning fork), showing sensorineural deafness. In age related deafness (Presbyacusis) , the hearing loss is a down sloping pattern without the 8 khz recovery. Since NIHL is permanent, such patients must be taken away from the noisy environment to prevent further deterioration of deafness. Management must be advised to measure noise levels in all areas of the factory.

The National Institute of Occupational safety and Health, Colombo 5, has advised to institute engineering controls to reduce noise and to use properly fitted ear-muffs for all exposed workers, or to change the machines to less noise generating equipment.

Annual medical examinations with audiometry to record and monitor any deterioration of NIHL, education of workers and management in safety bi-annually, and supervision to ensure discipline in wearing the ear muffs will constitute the Hearing Conservation Programme at the factory.

3. Annual Medical Examinations

Annual medical examinations (and pre-employment) are useful to asses newly developed illnesses, particularly when a record is kept in a manner to detect at a glance a change in the health status. This can be done as in table 1.

	2011	2012	2013	2014
Weight(kg)				
Height(m)				
BMI				
General Exam				
CVS –pulse				
B/p				
Respiratory system				
Abdomen				
CNS				
Spine-mobility				

Table 1

You can also add S. Creatinine with GFR and any specific tests for that particular occupation, exposure or factory.

It is important that a proper occupational history is taken. After the examination the relevant changes be discussed. This will include the management of newly discovered hypertension, diabetes, liver disease etc. Unfortunately some of the larger hospitals send teams that concentrate mainly on the investigations with no discussion and no comparison of parameters in earlier years with no benefit for the patient. Safety is often not dealt with.

Food handlers

Today large numbers are involved in food handling in hotels, food factories, eating houses etc and GPs are called in to do statutory annual medical examinations. The local authority medical departments determine what tests are to be done with a view to preventing food poisoning in the large number of consumers. These investigations include:

Stools	Blood	Urine
• Culture for Salmonella sp. & Shigella sp. • For Full Report (Microscopy, ADC)	• Full Blood Count • S.A.T.(Widal Test) • Hepatitis A or HBSAy	• Full Report

- X-ray Chest (PA),
- Nasal and Finger/palms for culture

Those positive for Salmonella sp. and Shigella sp. can be treated with Ciprofloxacin or Cotrimoxazole and checked again while those positive for nasal swab culture for staph. Aureus can be treated with Mucipirocin Ointment externally for 5 days.

However the evidence (WHO) is that doing these investigations are questionable. Preventing or minimizing food contamination has to be cost effective. Investigations have been done away with in U.S. diplomatic missions.

Most important is the intermittent washing of hands during food handling and the observance of proper hygienic procedures to prevent outbreaks of food borne illness/poisoning during:- preparation, processing /production, cooking, packaging, storing or retailing food, and the prevention of cross contamination. Further more, even after medical examination is done, cleared personnel can get infected, and thus organisms at that time may not detected if the test were done prior to contamination.

There is a place to discuss the need for the expensive tests with the statutory medical authorities. For instance it is dangerous to do X-rays annually (even pilots are required to do only every 5 years) and T.B. is not transmitted by food handlers. Immunization against Hepatitis A is better than testing. Stools for Amoebae, Ova, and cyst are most often negative and are not helpful – **better to emphasize personal hygiene**. The conclusion of WHO study was that **"pre-employment and subsequent routine medical examinations of food handlers are ineffective and thus unnecessary"**. This would be appropriate at a time of illness or outbreak of food poisoning. The financial burden too has been substantial.

Finally, the Widal (S.A.T) test being positive ('o') has been highly controversial. It is non-specific, can be due to cross reactions, is poorly standardized and variable in different laboratories. In short thoroughly unreliable and ambiguous. Even current text books say "should not be used". It may have a place in diagnosis in the clinically ill when there are increasing titres. The Gold Standard is a blood culture isolation of the bacterium.

4. Notifiable Occupational Disease

The International Labour Organization in 2002 and 2010 issued a list of occupational diseases. These are not all included in the Sri Lankan Factories Ordinance (now 74 years old) and the Workmen's Compensation Ordinance, but those most likely to have been caused by work is given in the attached list (recommended for inclusion in the law) which would be of use to GPs working in or near factories and OPD doctors.

Summary

General Practice is considered a specialty in width and not depth. The wider our ease with handling the width of presentations, the better it is for our patients and the perception of our speciality in the eyes of the public and amongst our peers.
This concise focus on occupational health is based on current available 'best evidence'. General Practitioners will realise that most recommendations challenges traditional thinking and practices for these illnesses, and adoption of current evidence into our day to day practice is a challenge that all of us have to face.

CONFIDENTIAL

NOTICE OF PATIENT SUFFERING FROM PRESCRIBED OCCUPATIONAL DISEASES

(This list contains illnesses more that required under the present law)
This notice shall be completed by a registered medical practitioner attending on or called in to visit a patient whom he believe to be suffering from an occupational disease and forwarded to the Area Medical Officer of Health and Deputy Director General (Occ.Hygiene), Department of Labour

Name of Patient	Age	Sex	Date of Birth
NIC NO		EPF NO:	
Residential address		Present Occupation	Period exposure
Name and address of Employer	Diagnosis		
	If patient is deceased, State date of last attendance		

Name of Doctor

Name and address of Hospital/ Clinic

Tel. No Doctor's Reg. No.

ANY ILLNESS OR DISABILITY DE TERMINED BY AN AUTHORIZED MEDICAL BOARD TO BE WORK RELATED

LIST OF NOTIFIABLE OCCUPATIONAL DISEASES

ANILINE POISONING
ANTHRAX
ARSENICAL POISONING
ASBESTOSIS
BAROTRAUMA
BERYLLIUM POISONING
BYSSINOSIS
CADMIUM POISONONG
CARBON BISULPHIDE POISONING
CHROME ULCERATION
CHRONIC BEZENE POISONING
COMPRESS AIR ILLNESS
EPITHELIOMATOUS ULCERATION
(due to tar, pitch, bitumen, mineral oil or paraffin or any compound product or residue of any such substance)
EXTRINSIC ALLERGIC ALVEOLITIS
HALOGENATED HYDROCARBON POISONING
HEAT OR COLD RELATED ILLNESS
DERMATITIS OF OCCUPATIONAL ORIGIN
LEAD POISONING
LIVER ANGIOSARCOMA
MANGANESE POISONING
MESOTHELIOMA
NOISE-INDUCED DEAFNESS
ORGANIC PHOSPHATES POISONING
OCCUPATIONAL ASTHMA
OCCUPATIONAL ALLERGY
OCCUPATIONAL CATARACT
OCCUPATIONAL INFECTIONS
OCCUPATIONAL MUSCULO-SKELETAL DISEASE
OCCUPATIONAL MALIGNANCY
PNEUMOCONIOSIS
PHOSPHOROUS POISONING
RADIATION ILLNESS
SILICOSIS
TOXIC ANEMIA
TOXIC HEPATITIS