THE
MALAYSIAN MEDICAL
GAZETTE

MANAGING RISKS IN AN OCCUPATIONAL ENVIRONMENT

DR LIM JAC FANG

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DISCLAIMER

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PREFACE

THE PRACTICE OF OCCUPATIONAL HEALTH, SAFETY AND HYGIENE (OHS) REQUIRES TECHNICAL KNOWLEDGE AND COULD BE INTIMIDATING FOR SOME IN ITS UNDERSTANDING AND IMPLEMENTATION. DR LIM JAC FANG HAS PRACTICED IN THIS FIELD SINCE 1999, COMMUNICATING IN SIMPLE EVERYDAY LANGUAGE WITHOUT LOSING THE IMPORTANCE OF THE MATERIAL DELIVERED CAN BE CHALLENGING. THE APPLICATION OF OHS IN EVERY WORKPLACE HAS BECOME INCREASINGLY NECESSARY TO PREVENT ACCIDENTS, INJURIES, AND THE RISK TO HEALTH FOR ALL WORKERS. THE BOOK AIMS TO DELIVER OHS ON A VARIETY OF TOPICS TO FACILITATE UNDERSTANDING AND IMPLEMENTATION TO THE PUBLIC BY A QUALIFIED OHS PRACTITIONER.

BIOGRAPHY

Dr. Lim Jac Fang is a medical doctor and an Occupational Health, Safety and Hygiene practitioner. He served in the Ministry of Health, Malaysia from 1990 to April 2019 in various facilities and capacities and was appointed the Head of the Occupational & Environmental Health Unit (OEHU), Department of Health, Sabah from 1999 to 2009. He pioneered and led the development of the OEHU in the state and established the OEHU in every district along with its programs and activities to secure the health and safety of workers in general. In that time, 17 Safety and Health Officers (SHO), 4 Occupational Health Doctors (OHD), 1 Occupational Health Nurse (OHN) and 3 Industrial Hygiene Technicians was registered with the Department of Occupational Safety and Health (DOSH).He is also a registered trainer with the Human Resource Development Fund (HRDF), NIOSH and FMM Malaysia and have conducted courses as well as being invited to speak at seminars and conferences. He has written articles for magazines and published his work in local and international journals.He has full membership in various local professional bodies like the Malaysian Industrial Hygiene Association (MIHA) and Human Factors Ergonomic Society of Malaysia (HFEM). He is also a Fellow of the Academy of Occupational & Environmental Medicine (FAOEM), Malaysia, Fellow of the International Institute of Risk and Safety Management (FIIRSM), UK and a Fellow of the Royal Society Public Health (FRSPH), UK. In addition, he is a graduate member of the Institution of Occupational Safety & Health (Grad IOSH), UK.

He is also a Certified Medical Impairment Assessor (CMIA), NIOSH Malaysia; a Trained Auditor in OHSAS 18001 from NCSB/QACAS Pty Ltd (Australia) and EMS 14001 from GMP Environmental Consultants Malaysia and is a Registered Consultant in the Occupational Safety and Health Consultant Register (OSHCR), UK and in 2019 was registered as a Certified Professional Industrial Hygienist (CPIH) by MIHA and accredited by the International Occupational Hygiene Association (IOHA).

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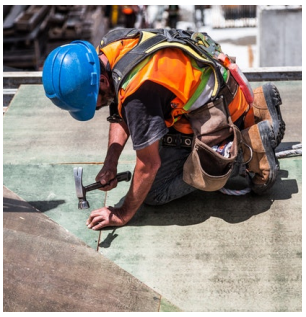
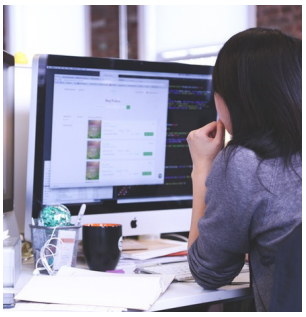




INTRODUCTION

The Malaysian Medical Gazette is an online hub for doctors, specialists and health care professionals to spread awareness and health education to members of the public in an easily accessible and reliable platform.

With the advent of social media and information technology, the public has unlimited access to information at the click of a mouse. Their enthusiasm to take an active part in their own health care management coupled with the ease of information sharing is unfortunately often at times detrimental due largely to the fact that they are unable to differentiate between valid sources of information and unreliable ones.

In an effort to provide a more reliable source of medical and health related information, a group of doctors & healthcare professionals set up an online hub namely The Malaysian Medical Gazette (www.mmgazette.com) Dr Lim Jac Fang is a columnist for this publication an all content in this e-book is based on his MMG articles.

A GUIDE TO WORKING IN A HOT ENVIRONMENT

This past few weeks has been a challenge to the populace as they grapple with the intense heat from the present hot weather. It is even more challenging to the workers who have to work outdoors, and to a certain extent are also not protected even though they may work in the shade or indoors without air-conditioning. Humans are by nature warm blooded and the biochemical processes that occur in the body takes place within a very narrow operating temperature range, much like the engine of the car; that is why any deviation in the operating temperature triggers a signal to the driver and we respond accordingly by stopping the car.

But, in workers/people, do we have a ‘signal’ to tell us that we are operating out of range? The answer is when the body temperature goes down, we shiver and when it goes up, we know it as fever. As in the example of the car, high temperatures can cause the engine to fail or even burn up; it is about the same for people. So, a difference of a few degrees can have very serious consequences on our health. The body at all times must maintain this core body temperature of 36.8 degrees Celsius and for workers and people who work outdoors or are exposed to high temperatures must understand and control those factors which may change the body temperature.

Heat stress

Heat stress is when a worker is subjected to a combination of the type of work, environmental factors like the air movement and temperature, humidity and the surrounding heat or radiant heat and finally the amount of clothing or personal protective equipment that a worker has to use while working. The response towards this is known as heat strain which is the body's reaction to the above. In principle, the higher the heat stress, the greater is the strain; meaning that it will affect the health and work. The body therefore works tirelessly to keep the temperature 'stable' for optimal function and health through various means. At 39oC, we feel 'warm' or develop fever, by 41oC, we may lose our ability to sweat which is one of the important physiological function of stabilizing the body temperature and at 43oC, develop tissue damage in various organs of the body.

How the body regulates temperature is called thermoregulation.

Methods of thermoregulation is by vasodilatation where there is increase blood flow to the skin and hence heat loss through skin. 2 to 4 million sweat glands also help to regulate body temperature via evaporation (sweating) and is a major method of regulating temperature in hot conditions. Along with the sweat, there is loss of water and electrolytes (salt) which is why sweat is salty. This 'salt' is important for many functions in the body. Muscle cramps is one of the effect of the loss of salt from the body. So, how much sweat can be loss working on hot days? Up to 15 litres! And that's a lot of bottled water. As a result of the loss of water (dehydration), our body functions and productivity will begin to fail. Reduced mental and physical performance, increased risk of heat related illness like heat stress and heat stroke. Increase loss of fluids from the body can cause reduced blood volume and consequently heart problems and

So, can we work or continue to work in hot environments?

It should be possible if the following can be carried out. Acclimatization which is a combination of behavioural and physiological changes that can reduce the strain brought about by changes in the natural environment. These workers are able to adapt to hot surroundings and increase their tolerance to higher temperatures. For example, an office worker who have to supervise or their job requires them to work for a time in hot environments. These workers are first exposed to the hot environment for increasing periods of time until they are used to it or acclimatized. 7 to 10 days would be an average period taken for acclimatization to a workplace. Needless to say, a healthy worker adapts faster than one with pre-existing health problems.

Heat stroke

Heat stroke is the most dangerous health effect of working in hot environments. It happens when the body loses its ability to maintain its core temperature. This is life threatening and it occurs when the body temperature exceed 40oC. At this point, the worker is in imminent danger of heat stroke. Hot dry skin, rapidly rising body temperature, loss of consciousness and the person may also fit are the signs to watch out for in a victim of heat stroke.In the workplace, needless to say, all workers should be trained in first aid and be able to take quick action to avoid death. Move the victim to a cool shaded area and loosen all clothing. Immediate cooling by spraying/wetting the victim's body with cool water and fan to evaporate; or ice packs can be placed on limbs. If the person can tolerate, give sips of cool water. Call for help and monitor the vital signs.

Heat exhaustion

Heat exhaustion while it is serious is less severe than heat stroke and primarily due to lack of adequate water intake (fluid replacement). In this case, if not well managed will progress to heat stroke. The skin is moist and sticky, the person is weak/fatigue, nausea and vomiting might be present and they may have headache. First aid action as in heat stroke with adequate fluid replacement. Observe and refer to the hospital.

Heat syncope

Heat syncope or fainting is the mildest form and is caused also by inadequate fluid intake. It is due to the diversion of blood supply to the skin for cooling resulting in sudden drop of blood supply to the brain and consequent fainting. It happens suddenly and without warning. First aid is usually sufficient.

Heat cramps

Heat cramps is the result of doing heavy work in hot environment and is due to electrolyte (salt) imbalance caused by excessive sweating. Painful muscle contractions usually of the lower limb occurs. Water should be taken every 15 – 20 minutes in such an environment and workers must be advised not to rely on their thirst alone. Last but not least is a condition called prickly heat (heat rash). In a hot humid environment, sweat produced cannot evaporate easily and made worse by clogged pores. Skin hygiene would be the best way to avoid this condition.Thermal surveys should be carried out when workers are required to work in hot environments because in this condition it can affect productivity and quality of work as explained above. Thermal work limits should be applied to protect the workers from ill health due to heat.

What can we do when faced with work in hot environments?

The general health should be looked into during the medical surveillance. Factors to be taken into consideration are obesity, medication, age and the state of acclimatization because it can affect the health of the workers. Adequate ventilation either natural or mechanical should be used whenever possible. Worker training hot environment should carried out especially the health effects of heat. And finally, not forgetting adequate supply of drinking water on site and freely available.

MAKING THE WORKPLACE SAFE

WE KNOW THAT A SAFE AND HEALTHY WORKING ENVIRONMENT IMPROVES PRODUCTIVITY AND QUALITY OF WORK. IT ALSO ENSURES THAT WORKERS ARE FREE FROM INJURY, ACCIDENTS AND ILL HEALTH BROUGHT ON BY UNSAFE PRACTICES AND PROCESSES IN THE WORKPLACE. HOW MANY OF US ARE AWARE OF THIS?

Take a look around your work area – is it “safe” and “healthy”? Do you suffer from aches and pains at the end of the workday? Are you now in more pain than when you first started working months or years ago? Are your colleagues having the same issues? You may think it is related to ageing, but it is likely that some, if not most, of it is contributed by your working environment.

How does one make the workplace better? We can begin by clarifying a few terms. First of all: hazard. A hazard is anything with the potential to cause harm. Examples of hazards are chemicals, heat, electricity or even the use of a ladder. Secondly: risk. A risk is the likelihood of a hazard affecting us. The level of risk is related to the severity of its consequences.Here's an analogy to better illustrate risk and hazard. A hungry lion (the hazard) is on the loose. It sees a man walking in front of him. What do you think will happen (the risk) to the man? Obviously, the lion has found its lunch (the consequence)! In another scenario, the lion is hungry but this time it's in a locked cage. A man walks towards the cage but stops far enough away from the reach of the lion. In this case, the lion will still be hungry and most likely angry!

If a hazard is recognised early, given a thorough evaluation and effectively controlled, we can minimise or eliminate risk. This is known as HIRARC, which is short for Hazard Identification, Risk Assessment and Risk Control. The following are the basic steps for a safe and healthy workplace – it's as easy as 1,2,3:

Hazard Identification

This is the most important step in HIRARC as it isolates the hazards as well as workers at risk. There are many ways to approach this.

- Scrutinise the event/injury or medical records available (may require permission). This helps to detect the area, activity or substance that may have resulted in the event/injury and also identify contributing factors like poor lighting, inadequate supervision or maintenance issues.
- Observe the workplace activities. This should be carried out during routine and non-routine activities.
- Use a checklist for thorough inspection. A job hazard analysis (JHA) can be used for a specific hazardous activity.

Hazard identification basically clarifies the hazardous job/task/element. It is then broken down into key steps in which recommendations to reduce or eliminate the identified problem areas.

Information on hazards can be obtained from the relevant agencies like DOSH (Department of Occupational Safety and Health). It is important to note that only significant hazards that can result in harm to workers should be identified and

RISK ASSESSMENT

ONCE THE SIGNIFICANT HAZARDS ARE IDENTIFIED, THEY NEED TO BE PRIORITISED. HIGHLY HAZARDOUS ELEMENTS HAVE TO BE MANAGED URGENTLY OVER THOSE CLASSIFIED AS MEDIUM OR LOW. RISK EVALUATION IS DONE USING A METHOD CALLED QUALITATIVE RISK ASSESSMENT. IT JUDGES THE RISK LEVEL IN TERMS OF LIKELIHOOD OF AN INCIDENT AND THE SEVERITY OF ITS CONSEQUENCES, ACCORDING TO THE FORMULA “RISK = LIKELIHOOD X SEVERITY”. THERE SHOULD BE A FIXED TIMELINE FOR REMEDIAL ACTION AFTER THE ASSESSMENT. TRAINING IS NECESSARY IN ORDER TO PERFORM RISK ASSESSMENT.

Risk Control

The third step in HIRARC is to control the risk identified above. Before recommending new or improved control measures, the preexisting mechanism must be examined. Is it adequate, properly maintained or appropriate for the workplace? If not, then recommendations to improve risk control will be given.
Some general principles of prevention/control that can be used are:

1. Avoiding risks
2. Evaluating unavoidable risks
3. Managing the source of the risk
4. Adapting work to the individual
5. Using technology
6. Replacing the dangerous with the less dangerous
7. Adequate information, instruction, training and supervision to employees

The process above does not end in 3 steps. All assessments must be recorded and kept for reference during a review by the management. Only significant hazards and recommendations need to be archived. They should include details of workers/people affected by the hazards, the existing control measures and their effectiveness. The review date and new control measure (if any) should also be included. It is important for the assessor to review all recommendations in a timely manner to ensure that not only that the recommendations are carried out but that they are also appropriate and useful.

Making your workplace safe and healthy is possible and should be made a priority. The main benefits are reduction or elimination of accidents, injuries and diseases among workers. Simply put, come to work healthy and retire safely and in good health.

References:

- The Management of Safety and Health at Work Regulations 1999 Schedule 1 (HSE)
- HSE Booklet 5 Steps to Risk Assessment

HOW DOES SHIFT WORK AFFECT YOUR HEALTH?

UNDERSTANDING SHIFT WORK IS IMPORTANT BECAUSE IT HAS EFFECTS ON SCHEDULES, STAFFING NEEDS, AND WORKLOADS, IN TERMS OF MAINTAINING PRODUCTIVITY, QUALITY AND THE MORALE OF THE WORKERS.

Shift work (SW) means a group of workers alternating with other groups in the workplace, working in a rotation through 24 hours in a day. It is required in some industries due to a demand supply need of 7 days a week and 365 days a year work force. There are commonly two or three shift schedules, at 8 hourly or 12 hourly rotations alternating with rest periods.

The main effect to health from shift work is the requirement to work during the normal human rest period from 9pm to 5am. The biological clock of the body resets itself during this period and work disrupts the circadian rhythm of normal wake – sleep cycle of the human body. This can then cause the worker to be awake during the next sleep, and then want to fall asleep during the next shift, due to inadequate rest.

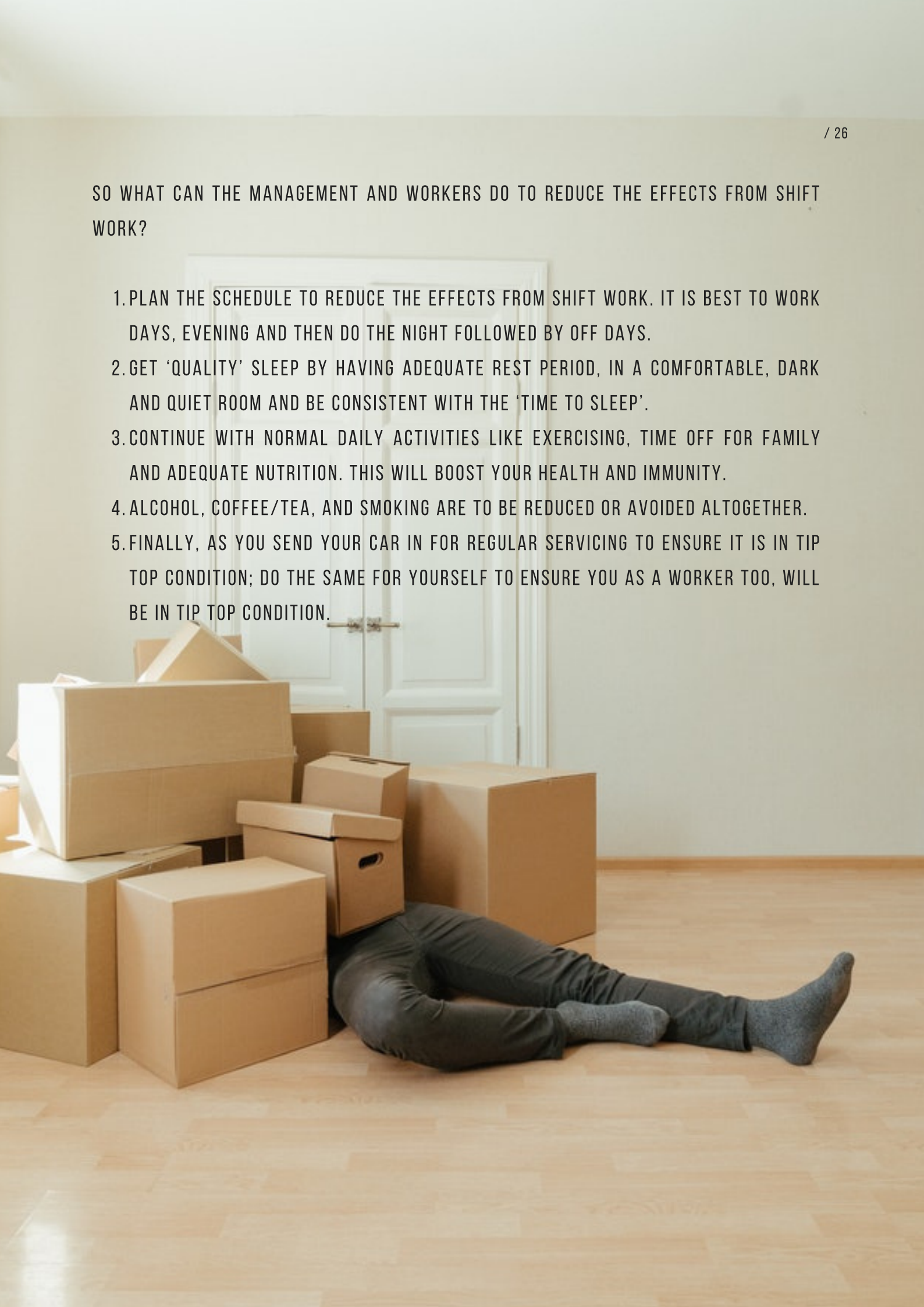
Stress and fatigue can result from working during shift work, because the body has to adjust between night and day. This is one of the mental health issues due to shift work. It is also sometimes known as shift lag. The workers become irritable, easily annoyed, suffer from lack of concentration and may be easily angered. These can cause accidents to occur in the workplace.

Workers on shift also suffer from fatigue. Workers feel very ‘tired out’ and lack motivation to do their day to day normal activities. It is like being depleted of strength. Gastric problems like feeling bloated, ‘fullness’ and sometimes pain in the stomach (gastritis) can also occur. In the long term, it may lower immunity and workers may fall ill easily.

Another aspect of shift work is disruption in social and family activities. Due to the nature of work and timing, shift work can result in a worker not able to attend family functions, and if both the husband and wife are on different shift, it may put a strain on the family.

SO WHAT CAN THE MANAGEMENT AND WORKERS DO TO REDUCE THE EFFECTS FROM SHIFT WORK?

1. PLAN THE SCHEDULE TO REDUCE THE EFFECTS FROM SHIFT WORK. IT IS BEST TO WORK DAYS, EVENING AND THEN DO THE NIGHT FOLLOWED BY OFF DAYS.
2. GET ‘QUALITY’ SLEEP BY HAVING ADEQUATE REST PERIOD, IN A COMFORTABLE, DARK AND QUIET ROOM AND BE CONSISTENT WITH THE ‘TIME TO SLEEP’.
3. CONTINUE WITH NORMAL DAILY ACTIVITIES LIKE EXERCISING, TIME OFF FOR FAMILY AND ADEQUATE NUTRITION. THIS WILL BOOST YOUR HEALTH AND IMMUNITY.
4. ALCOHOL, COFFEE/TEA, AND SMOKING ARE TO BE REDUCED OR AVOIDED ALTOGETHER.
5. FINALLY, AS YOU SEND YOUR CAR IN FOR REGULAR SERVICING TO ENSURE IT IS IN TIP TOP CONDITION; DO THE SAME FOR YOURSELF TO ENSURE YOU AS A WORKER TOO, WILL BE IN TIP TOP CONDITION.



WORKPLACE STRESS

WE HEAR A LOT ABOUT STRESS, BUT WHAT IS IT?

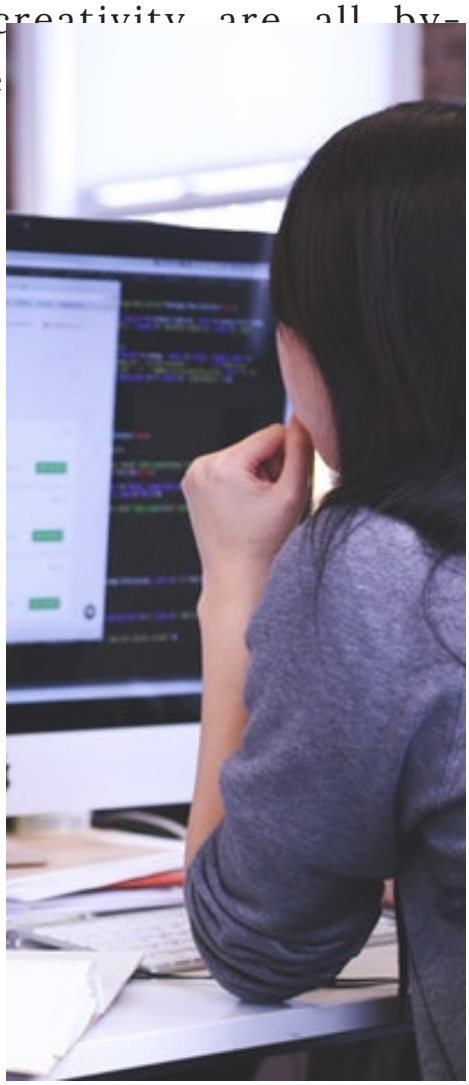
STRESS IS THE RESULT PRODUCED WHEN A STRUCTURE, SYSTEM OR ORGANISM IS ACTED UPON BY FORCES THAT DISRUPT EQUILIBRIUM OR PRODUCE STRAIN
- (TABER'S MEDICAL DICTIONARY)

In simpler terms, stress is the result of any emotional, physical, social, economic, or other factors that require a response or change. It is generally believed that some stress is okay (sometimes referred to as "challenge" or "positive stress") but when stress occurs in amounts that you cannot handle, both mental and physical changes may occur.

“Workplace stress” then is the harmful physical and emotional responses that can happen when there is a conflict between job demands on the employee and the amount of control an employee has over meeting these demands. In general, the combination of high demands in a job and a low amount of control over the situation can lead to stress.

Fear of job redundancy, layoffs due to an uncertain economy, increased demands for overtime due to staff cutbacks act as negative stressors. Employees who start to feel the “pressure to perform” can get caught in a downward spiral of increasing effort to meet rising expectations with no increase in job satisfaction. The relentless requirement to work at optimum performance takes its toll in job dissatisfaction, employee turnover, reduced efficiency, illness and even death. Absenteeism, illness, alcoholism, “petty internal politics”, bad or snap decisions, indifference and apathy, lack of motivation or creativity are all by-products of an over stressed workplace

Some stress is normal. In fact, it is often what provides us with the energy and motivation to meet our daily challenges both at home and at the workplace. Stress in these situations is the kind that helps you “rise” to a challenge and meet your goals such as deadlines, sales or production targets, or finding new clients. Some people would not consider this challenge a type of stress because, having met the challenge, we are satisfied and happy. However, as with most things, too much stress can have negative impacts. When the feeling of satisfaction turns into exhaustion, frustration or dissatisfaction, or when the challenges at work become too demanding, we begin to see negative signs of stress.



IN THE WORKPLACE, STRESS CAN BE THE RESULT OF ANY NUMBER OF SITUATIONS. SOME EXAMPLES INCLUDE;

FACTORS UNIQUE TO THE JOB
ROLE IN THE ORGANIZATION
CAREER DEVELOPMENT
RELATIONSHIP AT WORK
ORGANIZATIONAL CLIMATE

THE BODY'S "PRE-PROGRAMMED" RESPONSE TO STRESS HAS BEEN CALLED THE "GENERALIZED STRESS RESPONSE" AND INCLUDES:

- INCREASED BLOOD PRESSURE
- INCREASED METABOLISM (E.G., FASTER HEARTBEAT, FASTER RESPIRATION)
- DECREASE IN PROTEIN SYNTHESIS, INTESTINAL MOVEMENT (DIGESTION), IMMUNE AND ALLERGIC RESPONSE SYSTEMS
- INCREASED CHOLESTEROL AND FATTY ACIDS IN BLOOD FOR ENERGY PRODUCTION SYSTEMS
- LOCALIZED INFLAMMATION (REDNESS, SWELLING, HEAT AND PAIN)
- FASTER BLOOD CLOTTING
- INCREASED PRODUCTION OF BLOOD SUGAR FOR ENERGY
- INCREASED STOMACH ACIDS

In many cases, the origin of the stress is something that cannot be changed immediately. Therefore, finding ways to help maintain good mental health is essential. There are many ways to be proactive in dealing with stress.In the workplace, you might try some of the following:

Laughing is one of the easiest and best ways to reduce stress. Share a joke with a co-worker, watch a funny movie at home with some friends, read the comics, and try to see the humour in the situation.

Learn to relax, take several deep breaths throughout the day, or have regular stretch breaks. Stretching is simple enough to do anywhere and only takes a few seconds.

Take charge of your situation by taking 10 minutes at the beginning of each day to prioritize and organize your day. Be honest with your colleagues, but be constructive and make practical suggestions. Be realistic about what you can change.

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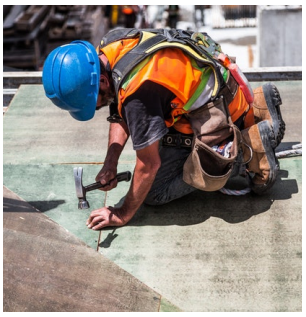
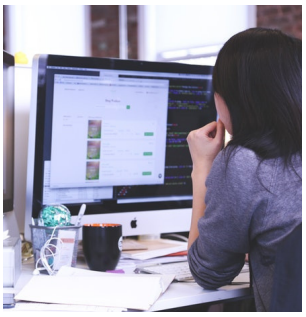
SUMMARY









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