Extreme tiredness and fatigue management

In the first of two features on extreme tiredness and fatigue management, Professor Craig Jackson, Birmingham City University, looks at what causes fatigue, how to recognise it in others and how to assess the extent of fatigue in the workforce.

Introduction

This article does not address the condition “chronic fatigue syndrome” but is concerned with fatigue and tiredness in workforces. While most workplace and operational demands have continued to evolve and increase, workers’ needs for sleep and rest have remained the same, in what can be described as a “sleep-deprived” society. If many workers are working harder than ever, with increased commuter times due to congested transportation systems, there is a possibility that extreme worker tiredness may be on the rise.

The workplace may not always be the cause of worker fatigue. In some cases, severe tiredness can be brought about by lifestyle factors, diseases or medical treatment, all of which will require considerate management in the workplace.

Understanding fatigue

Fatigue is a non-specific symptom, part of a condition of mental and/or physical weakness, although the underlying causes are often misunderstood. Physical fatigue can describe an inability to function normally due to exhaustion, while mental fatigue can include confusion, slowness of thought, an inability to concentrate, and will usually result in sleepiness.

Fatigue is now a serious consideration for many organisations as it can be associated with sleep loss and shift working, and has the potential to be found in any organisation, regardless of using shift work or not. Long working hours, shift systems, anti-social hours and on-call working are possible causes of workers becoming fatigued, but fatigue can also be present in conventional 9–5 working.

Managing fatigue among workforces requires an understanding of the relationship between working conditions, lifestyle, the individual workers and the manifestation of extreme tiredness. One of the sectors where the issue of fatigue is most critical is that of transport and aviation. Extreme tiredness has continuously been cited as a cause of many transport accidents and represents a problem for safety critical industries. Many high-profile industrial accidents have also singled out human error as a root cause, with operator fatigue being a mitigating factor.

Despite individual differences, research suggests that most people require between eight and nine hours of sleep each night (Kryger, Roth, Dement; 2005) and the duration of sleep is determined by the timing of when the sleep is taken. External cues such as noise of diurnal society and daylight can interrupt the length and quality of sleep duration, while internal cues such as biochemistry and circadian rhythm also have an influence. A further problem in fatigue management is that because most people will feel tired from time to time, it can often be ignored or just accepted by the sufferer as a symptom of modern life and becomes normalised. A constant difficulty in the area is that individuals’ subjective assessments of their fatigue and tiredness levels are often likely to be unreliable when they are themselves fatigued.

Causes of fatigue

Subjective fatigue and tiredness among a population is usually normally distributed, and has a prevalence of 20%, with continual fatigue occurring in 10% of the population (Royal College of Physicians, 2008). In this context, fatigue is the terminology for extreme tiredness, and some
suggestions claim that 3% of the UK working population will suffer from fatigue at any period in time. There can be both physical and psychological reasons behind fatigue, and causes could include specific problems such as glandular disorders (diabetes or hypothyroidism); sleep disorders (narcolepsy or sleep apnoea); or muscular disorders (myositis or multiple sclerosis). Other health problems behind fatigue could include being overweight or underweight, anaemia, chronic infections, cancer, respiratory problems or diseases of the liver and heart. In addition, the treatment for many ongoing conditions can also induce fatigue and these include recovery following abdominal or chest surgery, medication such as painkillers or beta-blockers, and treatments such as chemotherapy or radiotherapy. Lifestyles associated with fatigue can include doing too little and being unfit, from continuously doing too much and tiring oneself out, pregnancy, breastfeeding, increased use of alcohol or caffeinated drinks, and poor sleep hygiene. Psychological sources of fatigue could include persistent worries, concerns or feeling stressed, chronic insomnia, depression, or emotional shock.

Symptoms

Fatigue is believed to be twice as common in women as in men, although it is not believed to be associated with age or occupation. To this extent it must be viewed as a workplace issue that can impinge on all workers equally, although it is often suggested that fatigue occurs more readily in those workers who are “psychologically vulnerable” or who are working in conditions they find challenging. Vulnerable workers could be described as those who are of certain personality types associated with anxiety, a need for control, and those who are pessimistic (type-A and Negative Affecter types); those with ongoing physical health problems; or those with a history or mental health distress or traumatic experience. It is one of the most common presenting symptoms in primary care, being the main symptom among 5–10% of patients, and included as symptoms in a further 5–10% (Sharpe & Wilkes, 2002).

Cumulative fatigue

The effects of fatiguing work and lifestyles have cumulative consequences, and a Cumulative Fatigue Model proposed by occupational psychologists would view a heavy workload distributed over long-working works as a primary risk factor in fatigue development. In addition, fixed factors that cannot be altered (such as worker age, their circadian tolerance for shift work or even their health status to some extent) represent a second layer of fatigue modifiers. Adjustable factors such as the shift work schedule of the worker (and consequently their social and domestic schedules) are an additional layer of potential modifiers. For some individuals, their workload, shift work, health and lifestyle may become unbearable and fatigue may begin to develop, sometimes known as acute Shift Maladaptation Syndrome, resulting in insomnia, sleepiness, mood disturbances, increased errors and accidents, and social or family difficulties. If allowed to continue, such problems may develop into chronic health problems such as sleep disorders, cardiovascular disease, gastrointestinal problems, increased absenteeism and, in the extreme, disciplinary problems.

Assessment

Like stress, which is a psychological response to hazards in the workplace, fatigue is a phenomenon that can be measured and quantified within organisations via the use of sensible and careful workplace surveys. Perhaps one of the best and brief of such assessments is the 11-item CFS11 scale (Chalder et al., 1993). Although it can be used with sufferers of chronic fatigue syndrome, the scale also works perfectly well with healthy working populations. Taking less than five minutes to complete, this scale has 11 statements that respondents complete by themselves, answering one of four options for each of the items (scored 0–3 depending on severity of response).

It measures both psychological and physical fatigue, and also provides a global fatigue score, ranging from 0 (zero symptoms) to 33 (maximum symptoms), which allows for the distribution of fatigue to be
assessed within the organisation. In addition, there is a secondary scoring system that allows for classification of those who give answers synonymous with the symptoms of those suffering from severe fatigue, which effectively allows for a “case/non-case” grouping.

In addition, an organisation may need to assess and ensure that it is doing all it can reasonably do to minimise the likelihood of fatigue and its effects. A checklist developed by the Health and Safety Executive — “Assessing the Risks from Mental Fatigue” — provides a brief run-through for employers to ensure they are engaging in best practice. The “Fatigue and Risk Index Calculator” spreadsheet tool was developed for the HSE report *The Development of a Fatigue/Risk Index for Shift-Workers* (HSE, 2007). The calculator contains two indices; one relating to fatigue (the Fatigue Index) and one relating to risk (the Risk Index). Although the two indices are similar, the important difference between the two is that, essentially, risk peaks near to midnight, and fatigue tends to peak in workers around 5am. The fatigue and risk calculator demonstrates that fatigue and the risk thereof are to be considered independently of each other.

In the Risk Index Calculator spreadsheet, both the risk and the fatigue indices are comprised of three components:

- “Cumulative effects” (the way individual duty shifts combine to form a working schedule)
- “Duty timing” (the effects of shift start and finish times as well as duration)
- “Activity/breaks” (the content of the shift, activities undertaken, and break times).

**References**