INTRODUCTION

Many people are injured while working in automotive workshops. Worksafe Victoria (2004) conducted the analysis of ‘free text’ fields in 589 claims in the 3 financial years 1999-2002. The injuries can occur from handling heavy or awkward objects, heavy lifting, and prolonged or sustained work in awkward postures. This injury trend occurs across all types of vehicle repair, maintenance or installation work, and on all types of vehicles. These body stressing injuries make up 47% of all reported injuries. The next most common category of injury is slips, trips and falls, usually from floors according to substandard condition studies by WorkSafe Victoria (2004). Ergonomics studies are useful, as it relates to the human body and its limits. The most prevalent ergonomics-related injuries are musculoskeletal, either from repetition, overload, awkward positions or some combination. Most probably such injuries could be a reason affecting workers’ performance (Vieira et al., 2007).

Car tyre service centres are considered to be among the most hazardous in the automotive environment. Various car tyre activities involve handling heavy objects such as installation and replacing a tyre and rim (Martin et al., 2004). High force and awkward postures from lifting, lowering and handling tires may cause musculoskeletal disorders (MSDs) due to improper work postures (Zetterberg J. Human Ergol., 39: 53-56, 2010)

SURVEY OF BODY PART SYMPTOMS AMONG WORKERS IN A CAR TYRE SERVICE CENTRE

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The purpose of this study was to investigate the prevalence of body part symptoms and sources of injury/discomfort among workers in a car tyre service centre. Questionnaire survey and interview session were used to identify the level of body discomfort areas and sources of injury or discomfort. From questionnaire survey findings, 12 of respondents have body discomfort in the neck (66.7%), shoulder (83.3%), elbow/forearm (75%), hand/wrist (91.7%), knee (58.3%), lower leg (75%), ankle/foot (33%) and lower back (30%). The main sources of injury/discomfort in the workplace were poor body posture (75%), bending the back (75%), highly repetitive motions (75%), lifting heavy objects (83.3%), the long-term standing (66.7%), long-term squatting (58.3%), bending the neck (66.7%) and high hand force (58.3%). About 50% reported that poor workplace design also contributed to injury while 41.7% mentioned the use of hand tools. To address modifying the ergonomic hazards, engineering controls and administrative controls can be used. The study will be useful to ergonomists, researchers, consultants, workshop managers, maintenance workers and others concerned with identifying body part symptoms and sources of injury/discomfort at the workplace.

Key words: body part symptoms; source of injury; ergonomics; body discomfort; car tyre service

Communications
Awkward postures typically include repeated or prolonged reaching, twisting, bending, working overhead, kneeling, squatting and holding fixed positions or pinch grips (Keyserling et al., 1992). They may affect various areas of the body such as the hands, wrists, arms, shoulders, neck, back and knees. The effects of awkward postures are worse if work tasks also involve repetitive motions or forceful exertions (Ting Lin et al., 2007). According to the statistic report about the numbers of accidents by industry in Malaysia for 2007 conducted by the Social Security Organisation, 161 of cases were reported by tyre and tube industries (Socso, 2007). The purpose of this study was to investigate the prevalence of body part symptoms and sources of injury/discomfort among workers in a car tyre service centre.

METHODS

A case study was conducted at company A located in Selangor, Malaysia. There are 12 workers in the car tyre service centre area were involved in this survey. Questionnaire survey was mainly focused on body part symptoms and the sources of injury or uncomfortable feelings. The purpose of the symptoms survey was to document whether there are trends in pain, discomfort and injuries among standing workstation employees due to standing at work. Obviously, if worsening trend in lower limbs were detected, this would indicate a risk.

RESULTS AND DISCUSSION

The results of body part symptoms survey on workers and the sources of injury or discomfort in the workplace is shown in Figure 1. The percentages of respondents having body discomfort at the neck, shoulder, elbow/forearm, hand/wrist, knee, lower leg, ankle/foot and lower back are shown. The body part which experienced the most discomfort was the hand/wrist with about 91.7%. This was followed by the shoulder (83.3%), lower back (30%) and elbow/forearm (75%). Subjective complaints from the neck, lower leg and knee were reported in 66.7%, 75% and 58.3%, respectively. And about 33.3% reported that the ankle/foot contributed to body discomfort while 16.7% mentioned the chest and hip/thigh of body parts.

Fig. 1. Body discomfort areas.
Figure 2 shows that the percentage of the sources of injury/discomfort in the workplace are high for poor body posture, prolonged standing, squatting and kneeling, bending the back and neck, highly repetitive motions, lifting heavy objects, use of hand tools and poor workstation design. The highest percentage of the source of injury was in the lifting a heavy object with about 83.3% reporting it as major discomfort in the workplace. Subjective complaints from the prolonged standing, prolonged squatting, bending the neck and high hand force were reported in 66.7%, 58.3%, 66.7% and 58.3%, respectively.

And about 50% reported that poor workplace design contributed as a source of injury while 41.7% mentioned the use of hand tools. This was followed by body posture, bending the back and highly repetitive motions, all reported by 75%.

**CONCLUSIONS**

Controls should be put in the workplace to minimize or eliminate the risks of work-related disorders. There are two hierarchies of controls that are widely accepted for modifying ergonomic hazards: engineering controls and administrative controls. Engineering controls involve changing the workstation layout, selection and use of tools, position of process materials, or work methods used to complete a task. Administrative controls are policies or practices directed by management that can reduce or prevent exposure to ergonomics risk factors. Some organizations combine work practices with administrative controls. Since administrative controls do not eliminate hazards but merely reduce the duration of exposure, management must ensure the practices are being followed.

Daily management involvement is needed. The recommended administrative controls may include:-

a) Provide frequent (every 30 minutes) task/job rotation or longer rest breaks (30 minutes) to allow the body to recover from fatigue.

b) Rotate workers through several jobs with different physical demands (referred to as task/job expansion).

c) Train workers in recognizing risk factors and methods to ease the task demands.

d) Perform stretching exercises to relieve stress and limber muscles.
e) Provide wellness programs to improve the overall health of the employees.

f) Reduce shift length or curtail overtime to prevent fatigue.

g) Utilize team lifting for heavy or awkward lifts.

REFERENCES


