

Injury Profile of Employees at a Specific Beverage Manufacturing Company: A Retrospective Study

ABSTRACT: *This article reports on important information pertaining to the prevalence of occupational injuries. At present very little data exists on the prevalence of occupational injuries in South Africa.*

A retrospective study was undertaken to detail the occupational injuries sustained by employees at a specific beverage manufacturing company. The aim of this study was to determine the mechanisms, type, classification, anatomical site, frequency and time of injuries at this beverage company. The sample consisted of all employees that reported to the occupational health clinic with occupational injuries during the six-month review period i.e. July 2004-December 2004. Results of this review were computed in a self-complied injury data spreadsheet. The data was presented descriptively and the level of significance was set at 0.05.

Incorrect lifting of manual materials was reported as the most common mechanism of injury. Repetitive strain injuries were the most common type of injury. The spine/trunk was the site of 48 (66.7% of regions) injuries with the most frequently injured regions being the back (43.1%) and neck (22.2%). Most of the injuries were sustained during the month of December (27.8%).

It is recommended that aggressive health promotion and injury prevention strategies be implemented to reduce the burden of occupational injuries at this specific beverage manufacturing company.

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INTRODUCTION

For over a decade occupational injury has been acknowledged as a major public health problem internationally. Increasing injury prevalence and incidence rates, escalating costs of treatment, impact of limited success in injury prevention strategies in companies have all attributed to the seriousness of the problem (Krause et al., 1996). In South Africa, very little data exists on the prevalence and incidence of occupational injuries at specific companies.

Salazar (1987) has suggested that an understanding of the types and prevalence of injury will better prepare a company to increase the awareness for health promotion and injury prevention

training. Analysis by the occupational health sector in developed countries like the United States of America (USA) and Canada estimates that almost one in ten employees in a manufacturing company will face casualty in the course of the year for occupational injuries, with a combined annual cost of \$172 billion (Evenoff et al., 2002). The epidemiology of other companies with very high rates of specific and preventable injuries include the food and fishing processing companies with an estimated 17 occupational injuries per 1000 employees per annum (Harker et al., 1991).

The economic losses placed on companies as a result of occupational injuries is significant. Sources of this financial burden are incurred from decreased or loss of productivity, escalating medical and indemnity costs (Amell and Kumar, 2001). They are also of immediate concern to the families of employees who are adversely affected by such injuries.

It is in the best interest of companies to reduce or prevent occupational injuries before they develop into medical, social

and economic concern (Robinson et al., 1997). It is pertinent that a thorough understanding of the mechanisms, type, classification, anatomical site, frequency and time of injury is documented to assist the occupational physiotherapist, amongst others, to adequately plan for a particular injury.

Therefore the purpose of this retrospective study was to detail the occupational injuries that occurred at a specific beverage manufacturing company.

METHODOLOGY

Research Setting

This research was conducted at a specific beverage manufacturing company within the greater Durban area. This specific company was chosen because it is reflective of several manufacturing companies worldwide and at the time of the study employed 327 workers making this study feasible. The company consisted of several sites involving the production and storage of alcoholic beverages. This included seven permanent departments and four contractual

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departments. The seven permanent departments were the plant box, administration, workshop, medical centre, waste, risk control and stores. The four contractual departments (which have a 3-year renewable lease) were the laundry, catering, mail holding and forwarding services and technical services (i.e. electrical services, carpentry services, air conditioning services). An overview of the medical centre is described below.

Medical Centre

The occupational health clinic is situated within the medical centre and is concerned with staff-related health matters. The medical centre consists of one full-time company doctor, four occupational health nurses and two medical service coordinators. Two types of healthcare are provided, namely, primary health and occupational health. The primary healthcare facet provides workers who are not members of a medical aid plan with basic healthcare and advice. This healthcare includes the provision of a single course of medication if required or referral to a provincial hospital for an injury or disease that require more advanced or continued care.

The medical service coordinators are responsible for the implementation and control of the occupational health facet. The aims are to identify those processes, chemical substances or types of work that could negatively impact on an employees' health and to eliminate, minimize or control the hazard.

The occupational health programme at this company is compliant with the extent of the Occupation Health and Safety Act of 1993 that requires occupational health risk areas, jobs, processes, hazardous substances etc., to be identified, assessed, quantified and appropriate measures to be developed and implemented. The identification and assessment of occupational health risks are carried out via the Risk Management Programme (RMP). Consultants are used from time to time to assess the risk or to assist the company in setting up injury prevention strategies so that occupational health personnel can carry out the necessary tasks to assess the injury.

The medical centre is open 24 hours a day, seven days a week. In the event of an onsite emergency where medical

assistance is required, an internal telephone number is available. All employees are required to report any occupational injury to the medical service coordinator before the end of their shift.

Ethical Approval

This study has received ethical clearance from the University of Cape Town Ethics Committee.

Sample

The sample consisted of all employees, regardless of age, gender, work experience or race that reported to the occupational health clinic with occupational injuries during the six-month review period i.e. July 2004-December 2004. The following employees were excluded from this study: those who were injured outside the company, those who were injured at work but have only sought treatment elsewhere, those who reported injuries outside the company and those with medical conditions pre-dating their employment at the company.

Procedure

Permission to conduct the study was obtained from senior management and the employees' union representatives. Informed consent to access clinic records was obtained from all employees who reported to the occupational health clinic prior to the commencement of the study.

A retrospective study of the injury data was conducted as follows. All available records i.e. the clinical records, workman's compensation records, insurance claims and accident reports were reviewed and the relevant information retrieved by the principle researcher. This information included department, gender, age, mechanism of injury, type of injury, classification of injury, anatomical site, number of reported cases, month of injury and days off work. In order to ensure reliability and accuracy of the injury data extracted, all information was validated with a second reviewer.

Results of this review were computed in a self-compiled injury data spreadsheet. Face validity of the injury data spreadsheet was addressed as it was designed after consulting the relevant literature on gathering of epidemiology information regarding musculoskeletal

injury (Hamzat et al., 2004; Jelsma et al., 1997). Content validity of the injury data spreadsheet was addressed as input from experts in physiotherapy research and occupational health were consulted to scrutinize a draft copy. The data from the spreadsheet was analyzed using the Statistica 7 package and presented descriptively. The level of significance was set at 0.05.

RESULTS

Demographic Data

There were 72 employees who reported to the occupational health clinic during the six-month study period (July 2004-December 2004) and their records were accessed and reviewed. The mean age of this group was 39.9 years (SD=6.4) and the range was 22 to 51 years. There were 42 males and 30 females. This denotes a 58:42 ratio. A Chi-square test indicated that significantly ($p=0.00$) more males than females were injured compared to the number of employees at the company.

Males between 25-29 years of age made up the majority (30.95%) of reported injury cases in this age group, with the age group 30-34 years accounting for 19% and the age group 40-44 years for another 19% of the total number of reported cases. In females, the age groups 25-29 (26.7%) years and 30-34 (26.7%) years accounted equally for the majority of reported cases. The age group 45+ in both males (0%) and females (3.3%) accounted for the least number of reported cases.

Mechanisms of Injury

The most common mechanism of injury was incorrect lifting of manual materials as reported in 31 (42.5%) cases. Both poor workstation posture and being struck by an object was cited in 16 (22.2%) cases each. The least number of reported cases which contributed to a combined total of 3 (4.2%) cases were in the areas of using incorrect hand-reach distances, being exposed to poisonous fumes and machine-related injuries.

Types of Injury

Repetitive strain injuries were the most common type of injury with 48 (66.7%) injuries being reported to the occupational health clinic. Bruising accounted for a slightly higher number of injuries

(n=9, 12.5%) as compared to lacerations which accounted for 6 (8.3%) injuries. Other types of injuries that accounted for less than three reported cases included amputations, burns, fractures, inhalation, splashes, sprains and unconsciousness.

Anatomical Sites and Classification of Injury

A total of 72 injuries with 13 injured regions of the body were documented. The spine/trunk was the site of 48 (66.7% of regions) injuries with the most frequently injured regions being the back (43.1%) and the neck (22.2%). The upper limb was the site of 16 (22.2% of regions) injuries with the arm being the most often injured region accounting for 9 (12.5%) of injuries. The lower limb, head region, internal structures and multiple injuries accounted for less than 5% of all reported injuries. The spine/trunk, upper limb and multiple regions accounted for 3 (4.2%) of permanent injuries.

Time of Injury

Most of the injuries were sustained during the months of December (mean=20, 27.8%), November (mean=16, 22.2%) and August (mean=13, 18.1%). The least number of reported injuries were reported during the months of September (mean=7, 9.7%) and October (mean=7, 9.7%).

Sick Days for Occupational Injuries

The mean number of sick days off work for occupational injuries was 2.9 days (SD=2.9) with a range of 0-15 days. A t-test suggested a significant difference ($t=-3.02$, $p=0.00$) between the mean number of sick days taken off work for occupational injuries between males (mean=3.7, SD=3.47) and females (mean=1.7, SD=1.05). No significant correlation ($p=0.13$) was found between the age of employee and the number of sick days taken off work for occupational injuries.

DISCUSSION

The incidence of injury at this specific beverage company was high. Similar findings have been reported in other studies (Beaton et al., 2000; Evanoff et al., 2002; Fulton-Kehoe et al., 2000). An association was found between injury and gender, with males sustaining more

injuries. Interestingly, this implies that occupational tasks in males might lead to more problems than previously estimated. However, important differences in working patterns of the different genders were not explored in this study. A further study evaluating gender on job tenure, physical job demands, chronicity of injury, job satisfaction and income will provide a more accurate account.

Most of the injuries were as a result of incorrect lifting of manual materials and is consistently reported in the literature as a common mechanism of injury (Cromie et al., 2000; Molumphy et al., 1985). It is possible that employees are not adequately trained in the correct techniques of manual lifting. Some studies (Carrivick et al., 2005; Evanoff et al., 2003) have associated incorrect manual materials lifting with low back pain. More training, particularly in the area of correct manual lifting, is recommended.

In this study, as with other studies (Amick et al., 2005; Harisingham et al., 2004) poor postures at workstations was reported as a common mechanism of injury. If incorrect body postures are used at the workstation, such as excessive bending and twisting, to complete tasks then this can be a significant factor contributing to injury. Robinson et al., (1997) believes that the role of the occupational physical therapist is fundamental in giving appropriate advice and instructions on good working postures.

Repetitive strains, bruising and lacerations were reported as the most common types of injury which is also consistent with previous studies (Dufort et al., 1997; Lassen et al., 2005; Taylor et al., 2004). Most repetitive strain injuries can be prevented by adequate health promotion and injury prevention strategies. Health professionals must identify employees involved with repetitive movements and provide specific advice to avoid the repetition. Descatha et al., (2004) recommends modifying the repetitive task to allow for more beneficial working postures. Lowery et al., (1998) suggests reallocating employees to lighter duties following discomfort during repetitive movements.

As in previous studies (Ferguson et al., 2005; Gross and Battie, 2005; Rugulies and Krause 2005), most of the injuries were to the spine/trunk with the back

and neck being the most frequently injured regions reported by employees of which medical care was sought. LBP has been acknowledged as a major occupational health problem and is associated with a high incidence both in this study and worldwide (Bardin, 2003). In developed countries like the USA and Canada, LBP has been identified as the most frequent cause of disability among the workforce (Mierzejewski and Kumar, 1997).

Employees that are involved with the lifting of heavy objects are particularly at risk of developing lower back pain. The anatomical pathology of LBP is of a multi-factorial aetiology. This places enormous costs on the occupational health care budget of which the providers of health care, occupational physiotherapists in particular, are becoming increasingly accountable for the standards of care and the prevention of recurrence. It is suggested that a valid approach to the measurement of LBP be designed so that occupational physiotherapists can systematically document the outcome of the clinical interventions applied and compare these results against any significant changes of future interventions (Bardin, 2002)

The upper limb and spine/trunk accounted for permanent injuries. The upper limbs are consistently reported as the most vulnerable site for permanent injuries (Lassen et al., 2005; Mell et al., 2005) due to the functional role they frequently play in manipulative skills. As such, it is likely that serious injury does develop as a result of accidents and cumulative trauma or other factors leading to serious or permanent injury.

Most of the injuries were sustained towards the end of the year. Due to the fact that the workload at this specific beverage company is higher towards the end of the year and most of the staff are on vacation leave, it is likely that more accidents and injuries tend to occur.

Furthermore, according to the guest book records employees bring more relatives to the company at the end of the year, especially during the festive season, than on any other part of the year. With factors such as the increase in workload and the distraction of the relatives (children included), it is likely that there would be an increase in injuries, accidents and even loss of production time.

Although senior management at this specific beverage company has the right to expect a satisfactory level of job performance from all employees, this must be achieved without compromising their health and safety. Therefore if risk control measures are not strictly enforced then this company could face increased expenditure to control the incidence of injuries that may occur during this part of the year.

There was a significant difference between the mean number of days taken off work as sick leave for occupational injuries between males and females. Lowery et al., (2000) reported similar findings. The lack of correlation between the age of employee and the number of sick days taken off work for occupational injuries indicate that senior management must give equal attention to both young and older employees in developing programmes to promote health and prevent injury.

CONCLUSION

In summary, incorrect manual materials lifting was the most frequent mechanism of injury reported. Repetitive strain injuries were the most common type of injury reported. The most frequently injured anatomical sites were the back and neck regions. Most of the injuries were sustained during the month of December.

Occupational physiotherapists must become more proactive in work conditioning and work hardening programmes and implement aggressive health promotion and injury prevention strategies to reduce the burden of injuries at this specific beverage manufacturing company.

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