How much do beverage employees of a South African beverage manufacturer know about occupational health and safety regulations?

L Chetty MSc Phys, Senior Physiotherapist, National Health Service, United Kingdom
J Jelsma PhD Professor, Division of Physiotherapy, Faculty of Health Sciences, University of Cape Town
S Maart BSc(Phys) MPH Senior Lecturer, Division of Physiotherapy, Faculty of Health Sciences, University of Cape Town

ABSTRACT

Introduction:
The Allied Health Professionals (AHPs) form an integral part of the occupational healthcare system in South Africa and can improve the health and safety of employees and promote productivity. An analysis of the occupation health and safety knowledge of employees will assist in the development and implementation of effective training programmes by identifying gaps in existing health and safety practice and demonstrate the need for more AHPs to be involved in the occupational health specialty. The purpose of this study was to determine how much beverage employees at a South African beverage manufacturer know about occupational health and safety regulations.

Method:
A descriptive, cross-sectional survey design with anonymous return mailing was used. A questionnaire was used as the measuring instrument to capture information about employees’ health and safety knowledge.

Results:
Two hundred and eighty two employees returned their questionnaires and 83.5% of these were viable for analysis. One hundred and forty employees (51.3%) were unable to list correctly any of the general health and safety rules applicable to this company. Employees felt that more health and safety workshops and in-service training should be implemented, more occupational healthcare professionals employed and specialised safety courses should be introduced to keep them up to date with safety practices.

Conclusion:
It is concluded that the knowledge of the health and safety regulations of employees can be used to inform a more specialised training programme. This specialised training can be provided by AHPs in collaboration with the company’s existing medical department, to encourage a more dynamic and proactive attitude towards preventing injuries in the workplace.

Key words: Health and safety knowledge, Beverage manufacturing company, Employees, Allied health professionals

Introduction
In South Africa, occupational health has undergone several changes over the last decade. The most important change was in 1993 with the promulgation of the Occupational Health and Safety Act (OHSA) which was implemented in 1994. This Act has led to a heightened awareness of employee health requirements and the need for more proactive health and safety measures to monitor hazards in the workplace. It also provides a framework to ensure that both employers and employees meet minimum standards for injury prevention. The provincial and national health authorities are now planning the restructuring of health systems in both public and private sectors with the emphasis being placed on the development of occupational health services. This restructuring of the occupational health market is aimed at making occupational health and safety of employees and promote productivity. An analysis of the occupation health and safety knowledge of employees will assist in the development and implementation of effective training programmes by identifying gaps in existing health and safety practice increasingly effective.

The changes that were introduced to the South African workplace healthcare system pose great challenges to the allied health professionals (AHPs), for example, physiotherapists, occupational therapists, speech and hearing therapists etc. These professions in particular have a historical role in promoting health and preventing injury and yet they are not routinely employed by occupational health departments. Traditionally, only occupational health doctors, nurses and technicians are seen as essential in the management of injured employees at work. This is in spite of the integral part that AHPs play in occupational health rehabilitation. This includes, specialised manual therapy treatment, specific injury prevention advice and tailored health promotion activities, functional capacity evaluations, restorative exercises, work hardening and conditioning programmes, pre-work physical and cognitive screening, workplace ergonomics, management of noise-induce hearing loss and worker biomechanics assessments.

Although the OHSA explicitly requires that safety training programmes are implemented in the workplace, previous research has shown that generic health and safety training provided by companies has been ineffective in reducing risk in the workplace. Under the Act employees are also responsible for their own health and safety compliance by adhering to safety procedures and carrying out work in a safe manner. In order to determine whether employees are safely performing their duties, their knowledge, skills and motivation to adhere to safety regulations should be investigated. It is beyond the scope of this paper to investigate all three of these determinants and so this study will focus on determining the current health and safety knowledge of employees at a beverage manufacturing company. The rationale for choosing the knowledge determinant was that, in order to work safely and productively, employees must firstly have the knowledge of the safety regulations so that they know what safely practices are expected of them, then secondly, they must have the skill to be able to perform these practices and thirdly have the motivation to practise safe behaviours in order to comply with safety legislation.

At present, the extent to which AHPs have been involved in the South African occupational health sector has been limited.

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In addition, with the ever changing healthcare scenario in South Africa, AHPs need to demonstrate that they can adapt and deliver a service to occupational health departments and that their service truly makes a difference. The implications for AHPs being ignorant of and not meeting the health and safety needs of employees and companies, risks professional credibility within the occupational health specialty. By determining how much employees know about the health and safety regulations of their company, will provide the AHPs with the information needed to identify the gaps in the employee knowledge and to encourage companies to take appropriate measures of ensuring that their training sessions are effective. The knowledge of how aware employees are of the healthy and safety regulations could also be used to motivate for the employment of AHPs to work in collaboration with the companies existing medical department to deliver more specialised training sessions. This could improve the health and safety standards of the company, which could in turn improve the productivity of the company.

**Purpose**
The purpose of this study was to determine the occupational health and safety knowledge of employees at a South African beverage manufacturing company. The employees were also asked to identify and make recommendations of health and safety aspects that should be addressed and improved.

**Methodology**
**Research Design**
A descriptive, cross-sectional survey design with anonymous return mailing was used. The anonymous return mailing was used to increase the privacy and confidentiality of the respondents, with the expectation of encouraging more honest feedback, without employees fearing institutional sanctions or penalty.

**Research Setting**
This research was conducted at a beverage manufacturing company within the greater Durban area in South Africa. This specific beverage manufacturing company was chosen because of its national reputation and international links and at the time of the study employed 327 workers. The company consisted of several sites involving the production and storage of beverages. This included seven permanent departments and four contractual 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 medical centre consisted of one full-time company doctor, four occupational health nurses and two medical service coordinators. Two types of healthcare were provided, namely, primary health and occupational health.

The primary healthcare service was staffed by the company doctor and one medical coordinator. It provides basic health care and advice to workers who are not members of a medical aid plan. This healthcare included the provision of a single course of medication if required or referral to a provincial hospital for an injury or disease that required more advanced or continued care.

The occupational health clinic was situated within the medical centre and was concerned with work-related health matters. It was staffed by four occupational health nurses and one medical coordinator. The company doctor only dealt with complex occupational health cases which were referred by the occupational health nurse. The occupational health clinic aimed to identify those processes, chemical substances or types of work that could negatively impact on an employee’s health and to eliminate, minimise or control the hazard. The identification and assessment of occupational health risks were carried out via the Risk Management Programme (RMP).

Consultants were 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 could carry out the necessary tasks to assess the injury.

The medical centre was open 24 hours a day, seven days a week. In the event of an onsite emergency where medical assistance was required, an internal telephone number was available. All employees were required to report any occupational injury to the medical service coordinator before the end of their shift. There were no AHPs employed in this company to assist in addressing the health and safety needs of their employees.

**Ethical approval**
This study received ethical clearance from the University of Cape Town Ethics Committee.

**Sample**
The target sample included all individuals who were employed at this beverage manufacturing company at the time of the study in order to obtain a true reflection of the health and safety knowledge at this company. As all employees were included, sampling was not necessary. Employees comprised of general staff, administrative staff, technical staff and managerial staff of all ages, gender, years of experience or language spoken.

**Instrumentation**
A questionnaire was used as the data collection instrument for this study (See appendix I). This questionnaire was developed by the researcher using the health, safety and risk training manual at this beverage manufacturing company. This manual contains information on the occupational health, safety and risk control regulations and guidelines of the KwaZulu-Natal region. It is reviewed on a quarterly basis by the health and safety committee to ensure its compliance with the Occupational Health and Safety Act and Regulations. The questionnaire included both open ended and closed questions to capture information in four categories. The categories included demographic details, general working information, employee awareness of safety procedures and protocols and employee recommendations with suggestions for improvement.

In order to ensure that research done with non-English speaking sectors of the South African population is valid and concurrently reliable, all questionnaires developed taking into account cultural differences should be subjected to a rigorous translation procedure. For the purpose of this study a forward and backward translation process of the English questionnaire and covering letter into Zulu and Afrikaans was done by two qualified translators employed by the former University of Durban-Westville (now the University of KwaZulu Natal). Furthermore, it is equally important to test the reliability and validity of the translated version, particularly if the source culture is very different to the culture in which the instrument is to be utilised. Therefore all questionnaires were piloted at a different beverage manufacturing company prior to distribution and the results were not included in this study. The results of the pilot study indicated that the participants were similar to those in the study in terms of culture and that all questions were clear and unambiguous. Therefore no changes were made to the questionnaire after the pilot study. As the questionnaire aimed to test knowledge, the test-retest reliability was not done, due to the possibility that employees might consult their health, safety and risk training manuals and be able to respond more appropriately on the second occasion, thereby invalidating this test.

**Procedure**
A meeting was arranged by the author with the a senior human resource officer and two worker union representatives in order to seek permission to conduct this study, explain the purpose of the study and the timeframe by which the questionnaires should be completed and returned to the author as well as the associated risks and benefits involved. At this meeting, both groups were very supportive of the study and granted unconditional permission. It was agreed that the questionnaires and associate covering letter be handed over to the senior human resource officer to post to
all employees, and those employees whose first language was not
English could contact the senior human resource officer to request a
Zulu or Afrikaans version if this was required.

The attached covering letter introduced the researcher, explained
the purpose of the research, the associated risks and
benefits and contained the contact details of the researcher, if
further information pertaining to the study was required by the
employee. A self-addressed stamped return envelope was also
included with the questionnaire and covering letter. It was agreed
at the meeting that the questionnaire would be returned directly to
the researcher to encourage open and honest responses. Written
consent was obtained and the return of a completed questionnaire
indicated that employees were willing to participate in this study and
they had no further questions. After 4 weeks a reminder letter
was posted to all employees by the senior human resource officer,
thanikig them if they had completed and returned the question-
naire and asking them to complete and return it if they had not.
Finally, it was agreed that the name of the beverage manufacturing
company would not be disclosed and the company would not be
identified in any presentation or publication unless prior written
approval was obtained from the company.

The data from the questionnaires were reduced to percentages
and analysed descriptively using the Statistica 7 package. The level
of significance was set at 0.05. The section on general working in-
formation and worker awareness of safety protocols were marked
against the information in the health, safety and risk training manual.
The recommendations were analysed as statements of opinion and
grouped together if there were common emerging themes.

Results and Discussion

Of the 327 questionnaires that were distributed, 282 were returned.
Nine questionnaires were incomplete and were consequently ex-
cluded. In total 273 questionnaires remained which were included
in the analysis. The effective response rate was therefore 83.5%.

The mean age of the employees was 32.8 years (SD=8.22) and
the range was 17-52 years. The participants included 195 males
and 78 females. This denotes a ratio of 71:29 as compared to 70:30
of all working employees at the company. This indicated that the
ratios in this study were representative of the employee popula-
tion. Most employees first language was English (n=187, 68.5%).
The remaining participants’ first language was either Zulu (n=78,
26.6%) or Afrikaans (n=8, 2.9%). All returned questionnaires
were in English and no employee requested the Zulu or Afrikaans
version of the questionnaire. This was possibly due to the fact that
the preferred language of the employees who returned the question-
naire was English, while the other employees may have not been
comfortable approaching human resources for a translated copy of
the questionnaire. This could have been due to fear of institutional
sanctions or penalty or loss to the company benefits that they are
normally entitled to if they demonstrated poor safety knowledge
and the social stigma of not being literate in written English. How-
however, it must be emphasised that a covering letter accompanied the
questionnaire and clearly stipulated that completed questionnaire
must be returned to the researcher. The role of human resources
in this study was to post the blank questionnaires and to routinely
send a reminder to all employees. As the questionnaire was to
be returned to the researcher, human resources were not aware of
those employees that returned the questionnaire and of those
that did not.

In terms of education, 111 (40.7%) had secondary level school-
ing, 72 (26.4%) had technical trade schooling and 90 (32.9%) had
tertiary level education. More than half of the employees (n=151)
were from the workshop department while 122 were from the
administrative support sector. This denotes a ratio of 55:45 as
compared to 60:40 of all working employees at the company. A
chi-square test indicated that there was no significant difference
between the ratio of the workshop department and administrative
support sector in the sample compared to the population (p=0.47).
The cover letter asked employees to only answer questions that
were relevant to their workplace and not to answer any questions
that they were uncomfortable with. The mean number of work-
ing years at this company was 5.9 years (SD=4.36) and the range
was 1-17 years. All employees (n=273) were employed full-time.

Since employees are often confronted with hazards at the
workplace, it is important to understand their general working
knowledge of occupational health and safety. This knowledge may
assist with the development of safety training which could alleviate
or reduce the impact of these hazards. One-hundred and seventy
employees (62.3%) indicated that they received occupational
health and safety training for their particular job. One-hundred and
twenty employees (44%) reported that they were shift workers
(i.e. working both normal and outside the scheduled work times).
Of these, 102 employees (85%) indicated that the change of shift
affected their productivity and/or safety, with most employees (n=22,
21.6%) stating that shift work affected their sleeping pat-
terns, resulting in increase tiredness and fatigue in their next shift.
This finding was similar to Maldonado et al9 who reported that with
improved global communication and commercial expansion, more
employees are now required to work on rotational shift schedules
which can affect sleep patterns contributing to increased inatten-
tion, reduced work performance and more errors and accidents.

Most of the employees (n=174, 63.7%) believed that the health
and safety team at this specific company was fully committed to
implementing a working environment that was safe, healthy and free
from hazards. More than half of the employees (n=140, 51.3%) felt
that the health and safety training was adequate in order for them
to safely and productively perform their duties. However, because of
poor record keeping at this beverage company it could not be
established what safety training was done as well as the number
of training sessions that employees underwent to feel adequately
prepared in safety management. Globally millions of occupational
injuries and illnesses are reported annually in the workplace due to
the inconsistent recording of safety regulations training11. Several
studies have shown that specialised health and safety training leads
to employees retaining the knowledge and skill to recognise the
risks associated with their work activity, which improves health
and safety11-13.

Although 209 (76.6%) of employees were aware of the safety
requirements that visitors must adhere to before entering or while
working on the premises, almost 40% (n=105) of employees were
unsure of whether visitors to their department were issued with
the correct safety devices and/or personal protective equipment
(PPE) when necessary. The exposure to risks by visitors is much
shorter than for employees due to the restriction in visiting hours.
As a result employees face potential the distribution of PPE to
visitors and determine whether or not they have been issued with
the correct PPE14. This makes visitors more predisposed to accidents
and the company more prone to litigation. A crucial part of a
company’s overall effort in reducing risk should be the
acquisition and distribution of reliable, safe and effective personal
protective equipment to both employees and visitors. The risk
manager is responsible for the overall safety for all persons on
the company premises and needs to ensure that visitors are issued with
the correct safety devices/PPE, when necessary15.

One hundred and forty employees (51.3%) were unable to
correctly list any of the general health and safety rules applicable
to this company. Sixty three employees (23.3%) correctly listed the
four types of hazards within the working environment, namely,
physical, biological, chemical and psychosocial. Fifty three employ-
ees (19.4%) were able to fully explain the dangers regarding the
physical, biological, chemical and psychosocial. Fifty three employ-
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ees (19.4%) were able to fully explain the dangers regarding the

use and impairment at work and employees need to be aware of these policies. However, two later studies from Frome17,18 proposed the need to have an understanding between the context of alcohol use (off the job vs. on the job) and the type of productivity outcome (attendance outcomes vs. performance and safety outcomes). If the consumption of alcohol beverages within legal limits on the job, provided by the company, does not affect employee productivity, then can we conclude that it encourages alcohol abuse? We may not understand the full impact of alcohol use on employee productivity and safety until researchers pay closer attention to the context of alcohol use. There is definitely a need for additional research to determine the relationship of alcohol use in the workplace and employee productivity at this company in order to draw rigorous conclusions as to whether having access to alcohol beverages at work causes any work performance impairment. This presents another opportunity for AHPs to carry out research.

It is noteworthy that more than two-thirds (n = 207; 75.8%) of the employees indicated that they reported injuries on duty to their supervisors. But the ongoing nature of unsafe working practices was reinforced by the fact that 55% (n = 150) of employees reported supervisors. But the ongoing nature of unsafe working practices was the employees indicated that they reported injuries on duty to their supervisors. However, 123 employees (45.1%) failed to describe any of the safety procedures during a fire or explosion. Employees are expected to have a detailed knowledge of fire risk assessments such as methods of reducing the source of ignition and the evacuation procedure. The most serious impact of fire in companies is the loss of lives. Additionally, the actual physical structure is damaged which could result in reduced output and/or decline in sales. The company may also incur new production costs rising from the fire damage, or may even have to temporarily relocate, purchase new equipment and supplies or it could close permanently. All of these effects may force a reduction in employment levels21.

One hundred and ninety-seven employees (72.2%) knew that the first line of action for reporting injuries on duty was to report to the supervisor before the end of the shift. Failure to report a work injury to the supervisor before the end of a shift could result in disciplinary action for failure to follow reporting procedures. If injuries are not reported then no further investigation into the cause or probable cause of the incident would be investigated. This would mean that no corrective action and/or care plan interventions could be implemented to ensure that this incident does not occur again. Approximately half of workshop employees (n = 74, 49%) could describe the regulation for stacking and storing dangerous goods. In terms of safety regulations, 209 employees (76.6%) were aware of the safety obligations that visitors must follow before entering and while on the working premises. However, 123 employees (45.1%) understood the steps to be followed when unsure of how to correctly use safety devices and/or personal protective equipment.

Employees were asked to explain briefly any aspects of health and safety that should be addressed. One hundred and sixty-seven employees (61.2%) felt that onsite supervisors should play a more proactive role in ensuring that health and safety measures were implemented within the company. Sixty five employees (23.8%) felt that more health and safety workshops and in-service training should be provided. Seventy two employees (26.4%) recommended that senior management provide more occupational health care professionals and resources and introduce specialised safety courses to keep them current with safety practices.

The knowledge of the health and safety regulations of employees can be used to inform a more specialised training programme. This specialised training can be provided by AHPs in collaboration with the company’s existing medical department, to deliver and encourage a more dynamic and proactive attitude towards preventing injuries at this company. This multidisciplinary training would also address the multivariate factors of injury, using the biopsychosocial model of care. The efforts of addressing workplace injury should not only be in the area of developing health and safety educational programmes but also implementing and evaluating the effectiveness of such programmes.

There is an opportunity for AHPs to contribute to occupational health training programmes given the multi-dimensional health synergies that they promote thereby enhancing their visibility in the specialist field of occupational health. Further studies are required of different types of companies to validate the questionnaire used in this study so that it can be incorporated into routine practice measures of the health and safety knowledge of employees. It is strongly recommended that the collection of this data is standardised to allow for comparison between different companies.

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References
14. Zavadskas EK, Vaidogas ER, Bayesian reasoning in managerial deci-
16. Bell NS, Mangione TW, Howland J, Levine S, Mick B, Worksite bar-
19. Cherry NM, Meyer JD, Chen Y, Holt DL, McDonald JC, The re-
22. Li CY, Chen KR, Wu CH, Job stress and dissatisfaction in associa-
therapy, 2005; 8-10.

APPENDIX I: HEALTH AND SAFETY QUESTIONNAIRE

INSTRUCTIONS:
Please answer all questions by placing a cross (X) in the appropriate block(s) or by referring to the specific instructions that have been indicated.

You are only required to answer questions that are relevant to you in the workplace.

1. DEMOGRAPHIC DETAILS
1.1 Name (optional)
1.2 Gender:
1.2.1 Male
1.2.2 Female
1.3 Age:
1.4 Please indicate your first language:
1.4.1 English
1.4.2 Afrikaans
1.4.3 Zulu
1.4.4 Other (please specify)
1.5 Highest Educational Level:
1.5.1 No formal schooling
1.5.2 Primary Level (Grade 0-6)
1.5.3 Secondary Level (Grade 7-12)
1.5.4 Technical Trade School
1.5.5 Tertiary Level

.... continued on page 23
APPENDIX I: HEALTH AND SAFETY QUESTIONNAIRE  .... continued from page 22

1.6.1 Department:

| 1.6.1.1 Administration          |
| 1.6.1.2 Plant Box               |
| 1.6.1.3 Workshop                |
| 1.6.1.4 Health Services         |
| 1.6.1.5 Waste                   |
| 1.6.1.6 Risk Control            |
| 1.6.1.7 Stores                  |
| 1.6.1.8 Other (please specify)  |

1.6.2 Briefly explain your job description: __________________________________________

1.7 Number of years employed at this industry: ________________________________

1.8 Nature of employment:

| 1.8.1 Full-time worker |
| 1.8.2 Part-time worker |
| 1.8.3 Occasional worker |
| 1.8.4 Contractual worker |
| 1.8.5 Other (please specify) |

2. GENERAL WORKING INFORMATION

2.1 Have you received any work-related health and safety training for your particular job? If yes, briefly explain: ________________

2.2.1 Do you work in shifts? ____________________________________________

2.2.2 If yes, please indicate how many shifts you work per week: ___________

2.2.3 Please indicate the length (in hours) of each shift: ________________

2.2.4 Does the change of shift affect your productivity and/or safety? If yes, please elaborate: ____________________________

2.3 Please complete the following table by placing a cross (X) in the most appropriate block:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>UNSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3.1 Do you believe that the health and safety team at this specific industry is fully committed to implementing a working environment that is safe, healthy and free from hazards?</td>
<td></td>
<td></td>
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<tr>
<td>2.3.2 Do you feel that you are adequately trained to do your job safely and productively?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3.3 Do you report all injuries on duty (IOD’s) to your supervisors?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3.4 Does your working environment sometimes prevent you from safely performing your tasks (e.g. slippery floors, faulty machinery)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3.5 Are visitors to your department issued with the correct safety devices and personal protective equipment (when necessary)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. EMPLOYEE AWARENESS OF SAFETY PROTOCOL

INSTRUCTIONS:
Please indicate if you are aware of the following health and safety procedures and protocols by answering the questions below.

3.1 General Safety

3.1.1 List four general health and safety rules applicable to this company _____________________________

3.1.2 List the four types of hazards that you can come across in the working environment _____________________________

3.1.3 Explain the dangers regarding the consumption of alcohol while on duty _____________________________

3.2 Specific Safety Procedures and Protocols

3.2.1 Describe what you would do when there is a fire or an explosion _____________________________ .... continued on page 24
3.2.2 Explain the procedure for reporting injuries on duty

3.2.3 Describe the regulations for stacking and storing dangerous goods

3.2.4 What health and safety obligations must visitors follow before entering and while on the working premises?

3.2.5 What steps would you take if you are unsure on how to correctly use safety devices and/or personal protective equipment?

4. EMPLOYEE RECOMMENDATIONS

INSTRUCTIONS:
Please answer all questions in this section.

4.1.1 Are there any aspects of work-related health and safety that you feel should be addressed?

4.1.2 Briefly explain:

4.2.1 Do you have any recommendations regarding the improvement of health and safety within your company?

4.2.2 Briefly explain:

Thank you for your co-operation

Corresponding author
Laran Chetty
Email: laranchetty@gmail.com