Construction practitioners’ awareness of occupational diseases in the Botswana construction industry: An exploratory study

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ABSTRACT

The low awareness of occupational health issues makes construction workers more vulnerable to illness. This paper describes the results of a study to establish the level of awareness of occupational diseases amongst practitioners and funders in the Botswana construction industry. Construction practitioners based in Gaborone, Botswana were selected and invited to complete a survey. The questionnaire included questions on occupational health and safety legislative requirements, and awareness and understanding of occupational diseases as contained in occupational health and safety acts. The questionnaire was distributed to 35 individuals and a total of 27 questionnaires were completed providing a 77.1% response rate. Interviews on common themes were then conducted. There was insufficient awareness and understanding of the construction hazards and risks identified in the legislation, and they were unaware of activities and operations that expose workers to diseases or their preventive measures. It is recommended that the government and other construction bodies promote health awareness and prevention of diseases on construction sites.

Keywords: construction managers, construction practitioners, occupational diseases, awareness

INTRODUCTION

The construction industry has poor occupational health service provision despite its employees being exposed to many harmful substances, biological and physical hazards. According to Gyi, Gibb and Haslam, safety is a priority for construction firms, while health of employees is often not given the same consideration. Some reasons are that health is a complex issue requiring long-term strategies, whose benefits are not immediate and difficult to demonstrate. The requirement for effective health management in the construction industry is diminished by outdated legislation systems in developing countries with generally no statutory requirement for meeting health standards. Even well-known diseases that developed countries have addressed are not clearly addressed in developing countries. This lack of defined standards results in industry practitioners paying insufficient attention to occupational health problems within the industry.

However, some countries like South Africa have started to focus on health issues due to increasing insurance premiums and direct costs associated with hospitalisation. It is widely acknowledged that adequate health surveillance is not available and that early signs of work-related health problems are not identified within the construction industry.

THE IMPORTANCE OF OCCUPATIONAL HEALTH AND DISEASE AWARENESS

A poor level of occupational health awareness in the construction industry can have a negative impact as it determines individuals’ and organisations’ behaviour. Even though construction managers understand their role in safety and the prevention of injuries, they are less clear regarding the prevention of ill-health. The way in which management manages issues in relation to occupational health and safety (OH&S) may influence employees’ behaviour and safety. This is because workers focus more on job security while management focuses more on performance. Oliver, Cheyne, Tomas and Cox identify two fundamental causes of occupational accidents—the characteristics of the work and the organisational environments, and the psychological and behavioural characteristics of the individuals. Both are highly influenced by the focus that workers and management put on job security and performance. In order to meet basic occupational health needs on construction sites, participants should cooperate. Contractors, designers and owners all need to be alert to potential OH&S risks.

OCCUPATIONAL DISEASES ASSOCIATED WITH THE CONSTRUCTION INDUSTRY

Exposure to health risks while working on construction projects accounts for a significant proportion of the burden of diseases. For example, in the United Kingdom, researchers confirm that musculoskeletal disorders and respiratory tract cancers are the major health problems in construction, followed by incidence of dermatitis. Electricians and plumbers/heating engineers have been most at risk from mesothelioma and musculoskeletal...
Disorders have mainly affected labourers and painters while asthma affects carpenters. Table 1 demonstrates that the health-related problems in the construction industry can arise from exposure to various materials, different occupations and trades.

**Mesothelioma and asbestosis**

Asbestosis, mesothelioma and lung cancer are closely related diseases in terms of occupational exposures. There is a long delay between initial exposure to asbestos and death from either mesothelioma or asbestosis, typically between 30 and 40 years. Therefore deaths occurring now and most of those expected in the future reflect past conditions rather than current work practices. This highlights the need to raise awareness of such conditions on construction sites to ensure preventive measures are implemented.

**Dermatitis and other skin disorders**

Dermatitis occurs when the skin comes into contact with an irritant or allergen. Construction workers have a substantial risk of developing irritant or allergic contact dermatitis. Kuruvila, Dubey and Gahalaut, identify irritants and sensitisers in construction as:

1. **Irritants**: Cement, chalk, fly ash, hydrochloric and hydrofluoric acids, fibreglass, rock wool, wood preservatives, oil in brick-making.
2. **Sensitisers**: Cement, fly ash, chromate, cobalt, epoxy resin, rubber, leather gloves, adhesives, wood preservatives, fibreglass impregnated with phenol-formaldehyde, and polyurethane resins.

<table>
<thead>
<tr>
<th>Trade</th>
<th>Respiratory (Asthma, Cancer)</th>
<th>Skin (Dermatitis, Cancer)</th>
<th>Musculo-skeletal</th>
<th>Mental</th>
<th>Auditory</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Painters</td>
<td>1%</td>
<td>25%</td>
<td>21%</td>
<td>9%</td>
<td>43%</td>
<td>1%</td>
</tr>
<tr>
<td>Electricians</td>
<td>-</td>
<td>51%</td>
<td>11%</td>
<td>-</td>
<td>13%</td>
<td>21%</td>
</tr>
<tr>
<td>Plumbers/ heating engineers</td>
<td>&lt;1%</td>
<td>53%</td>
<td>8%</td>
<td>-</td>
<td>19%</td>
<td>16%</td>
</tr>
<tr>
<td>Carpenters</td>
<td>9%</td>
<td>34%</td>
<td>20%</td>
<td>-</td>
<td>23%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Source: McDonald, Chen & Cherry

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**Table 1. Trade comparison of work-related diseases in men within construction**

Founded in 1977, we are a Company that provides specialised Audiology, Computerised Dynamic Posturography and Occupational Health Equipment of the highest quality and standards.
Noise exposure
Exposure to noise in construction work is known to be highly variable. According to Neitzel, Stover and Seixas, sources of variation include trade and building site which are constant over work shifts; task, tool, and number of co-workers in the work area which vary within a shift; and the highly time-variable noise exposure associated with use of specific tools and the impact-type noise profile of construction tools.

Bacterial and viral diseases
Several viral and bacterial diseases have been identified as being associated with construction depending on the construction type and site. For example, bacteria (Shigella, E. coli) and viruses (Hepatitis A, B, C and HIV) were found on a construction site related to wastewater treatment plants or sewage.

It is evident that construction workers are at risk of exposure to various health hazards. However, there is general agreement among different authors cited in the literature that despite these risks, the industry appears to do very little in addressing the problem compared to what it does for safety.

The purpose of this study therefore was to establish the level of awareness construction practitioners and funders. There is a lack of research on this problem, and the findings could assist practitioners to deal with the health issues. Work-related health problems amongst construction workers are a cause for concern, particularly as strategies for their prevention are often poorly implemented. Furthermore, occupational legislation in developing countries tends to be outdated and ineffective. Therefore, this study is contributing to an understanding of occupational health issues in the construction industry, particularly in Botswana.

RESEARCH METHODOLOGY

The study was a descriptive survey which combined quantitative and qualitative methodology aimed at determining the level of awareness amongst clients, construction practitioners (architects, engineers, project managers), and contractors. The study was limited to running projects around Gaborone, the capital of Botswana. This was because the largest number of running projects constructed by the highest category of contractors have their headquarters in Gaborone. Further, 80% of the consultants in Botswana have their headquarters in Gaborone. The questionnaire included questions about professional group, age and diseases highlighted by the OH&S related Acts (The Factories Act, No 31 of 1973 and Workmen’s Compensation Act of 1998) of Botswana. According to the Public Procurement Asset Disposal Board, a contract value exceeding 10 million Pula is the highest category of contractor. Fourteen running projects were identified around Gaborone. Three were privately funded and the rest were either funded by parastal institutions or the Central Government of Botswana. Senior appointed project representatives of clients, construction practitioners and contractors were identified and approached to participate in the study. Thirty-five questionnaires were distributed and a total of 27 questionnaires were completed (Table 2). Leady & Ormrod state there is little point in sampling for small populations of less than 100. Therefore questionnaires were distributed to all 35 individuals and 27 of them were completed and returned, representing a response rate of 77.1%. The qualitative method was adopted to follow up on the common themes emanating from the questionnaire response. Since the study forms part of the main PhD study, ethics approval was granted by the University of Johannesburg Higher Degrees Committee.

RESULTS

Findings from interviews conducted and the questionnaire results led to the conclusion that the level of awareness for occupational diseases related to the construction industry was low. Since inspections are part of a Factories Act procedural requirement for construction sites, respondents agreed that if ever carried out, these inspections were focused on safety and health had never been an issue. Both the consultants for the projects and the management of the contractors agreed that neither health inspections nor assessments of worker medical conditions were ever carried out on their projects. One large international contractor reported that:

As a company, we have always conducted medical assessment of workers and conducted training on health issues.
“Medicals on the move – There is no place small enough, remote enough or distant enough for OCSA’s fleet of mobile units”

All abnormal cases are reviewed by an Occupational Medicine Practitioner

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- Pre-placement
- Periodic / transfer
- Return to work
- Exit

Fit-for-duty Medical Testing including:
- Full physical examination
- Vision screening (Keystone)
- Lung function & Audiometry screening
- ECG & X-ray
- Lab screening tests
- Heat tolerance test
- Functional capacity assessments
- Immunisation (where necessary)

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Table 3. Awareness of occupational health and safety legislative requirements

<table>
<thead>
<tr>
<th>Understanding of legislation</th>
<th>No response</th>
<th>%</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
<th>Unsure</th>
<th>%</th>
<th>Total response</th>
</tr>
</thead>
<tbody>
<tr>
<td>All requirements</td>
<td>2</td>
<td>7.4</td>
<td>20</td>
<td>74.1</td>
<td>3</td>
<td>11.1</td>
<td>2</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Only basic OH&amp;S site requirements</td>
<td>2</td>
<td>7.4</td>
<td>17</td>
<td>63.0</td>
<td>3</td>
<td>11.1</td>
<td>5</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Health-related issues (e.g. occupational diseases)</td>
<td>3</td>
<td>11.1</td>
<td>1</td>
<td>3.7</td>
<td>20</td>
<td>74.1</td>
<td>3</td>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Awareness of occupational diseases in the Workmen’s Compensation Act

<table>
<thead>
<tr>
<th>Disease</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
<th>Unsure</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos</td>
<td>15</td>
<td>56</td>
<td>7</td>
<td>26</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Occupational bronchitis, sinuses/asthma</td>
<td>19</td>
<td>70</td>
<td>3</td>
<td>11</td>
<td>9</td>
<td>33</td>
</tr>
<tr>
<td>Hearing impairment</td>
<td>24</td>
<td>89</td>
<td>3</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Deafness</td>
<td>21</td>
<td>78</td>
<td>4</td>
<td>15</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Tinnitus</td>
<td>7</td>
<td>26</td>
<td>6</td>
<td>22</td>
<td>14</td>
<td>52</td>
</tr>
<tr>
<td>Primary epitheliomatous cancer of the skin</td>
<td>16</td>
<td>59</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>Back / limb disorder</td>
<td>19</td>
<td>70</td>
<td>1</td>
<td>4</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Dermatitis</td>
<td>15</td>
<td>56</td>
<td>3</td>
<td>11</td>
<td>9</td>
<td>33</td>
</tr>
<tr>
<td>Heat stress</td>
<td>17</td>
<td>63</td>
<td>3</td>
<td>11</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>20</td>
<td>74</td>
<td>3</td>
<td>11</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>5</td>
<td>19</td>
<td>6</td>
<td>22</td>
<td>16</td>
<td>59</td>
</tr>
<tr>
<td>Compressed air illness</td>
<td>13</td>
<td>48</td>
<td>1</td>
<td>4</td>
<td>13</td>
<td>48</td>
</tr>
<tr>
<td>Noise and vibration hazards</td>
<td>22</td>
<td>81</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Bacteria – E. coli, shigellosis, typhoid fever, Salmonella, and cholera</td>
<td>16</td>
<td>59</td>
<td>7</td>
<td>26</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Fungi – Aspergillus</td>
<td>7</td>
<td>26</td>
<td>11</td>
<td>41</td>
<td>9</td>
<td>33</td>
</tr>
<tr>
<td>Parasites – Cryptosporidium and Giardia lamblia</td>
<td>7</td>
<td>26</td>
<td>9</td>
<td>33</td>
<td>11</td>
<td>41</td>
</tr>
<tr>
<td>Parasites – Roundworm (ascarisis)</td>
<td>8</td>
<td>30</td>
<td>9</td>
<td>33</td>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>Viruses – Hepatitis A</td>
<td>9</td>
<td>33</td>
<td>9</td>
<td>33</td>
<td>9</td>
<td>33</td>
</tr>
<tr>
<td>Blood-borne viruses – Hepatitis B and HIV</td>
<td>6</td>
<td>22</td>
<td>11</td>
<td>41</td>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>Mean</td>
<td>14</td>
<td>52</td>
<td>5</td>
<td>2</td>
<td>19</td>
<td>7.8</td>
</tr>
</tbody>
</table>

The respondents were asked to indicate their level of understanding/awareness of legislative requirements with respect to OH&S. The response was that 74% of the respondents (20 out of 27), claimed to know all the requirements of the legislation related to health and safety in construction. When the same question was asked regarding the health-related issues, and specifically dealing with diseases in the construction industry, the same number of respondents who indicated that they were aware of the health and safety legislative requirements (20 out of 27) said they were not aware of legislation discussing occupational health issues (Table 3).

A specific question was then asked with reference to their understanding of the diseases that were listed in the Workmen’s Compensation Act. Table 4 provides the response to the question. The results indicate that the majority of the construction practitioners were not aware that bacterial, fungal, parasites and viral diseases could be associated with the construction industry. Only 33% of the respondents indicated their knowledge of such related disease to be associated with construction.
On the other hand, scientific names of diseases are not easily identifiable by the construction practitioners. For instance, of the respondents, 78% were able only to identify with a common terminology such as deafness. The Act refers to the term tinnitus (the ringing in the ear) but only 26% of the respondents were familiar with the term and could associate it with a disease affecting the ear. Only 19% could identify the mesothelioma. Actually, the majority of respondents were unsure of not just the disease related to construction, but also confused by the name itself. During the interviews, it was apparent that construction practitioners are not interested in understanding medical terminologies.

“. . . only 56% . . . were aware of the health risks of dermatitis and asbestosis in the construction industry.”

Most of the respondents stated that they did not know the causes and could not identify the symptoms in occupational health. This clearly shows that lack of terminology simplicity in the Act could easily contribute to the under-reporting of work-related diseases. Practitioners were also less aware of the diseases from common but dangerous materials. For instance, only 56% of respondents were aware of the health risks of dermatitis and asbestosis in the construction industry. Interviews revealed that top management of contracting firms were reluctant to invest in the site workers on health-related issues. They indicated that most site workers are non-permanent and are casual workers, and workers may not wish to know their health status.

DISCUSSION

This study was the first of its kind for Botswana construction industry. The lack of awareness and knowledge of occupational diseases and health-related issues within the construction industry, as shown by the results, explains the lack of prevention strategies (health assessment, medicals and health surveillance) within the industry. It is also in line with the earlier conclusions of Gyi et al.,5 that there is a lack of health expertise in the industry. Admittedly, health issues should be diagnosed and reported by qualified occupational nurses or medical practitioners. However, a lack of awareness of common symptoms would not assist with improvement of health work practices. Construction workers would also be unlikely to know the causes of the occupationally related diseases that they could develop, nor seek compensation when affected, resulting in non-compensation by government authority. The results imply that the designers, the client and construction site supervisors in this study did not understand the risks associated with exposure to such hazards, reinforcing the importance of Gould and Joyce’s call for these people to be alert to potential OH&S risks.8

Despite several strident calls for industry-wide reforms, construction industries appear to have done little to address occupational health problems. In this study, contractors were reluctant to invest in the site workers as the majority of these workers were not permanently employed. They argued that health costs would be high as medicals and surveillance are time consuming and cannot be rushed – a finding that also accords with an earlier research.2 Contractors argued that medical practitioners were probably not familiar with construction activities and therefore unable to understand construction health problems. Equally, construction practitioners generally did not have a good appreciation of occupational health hazards and were thus unable to appreciate the benefits of engaging health practitioners on construction projects. It was difficult for the clients to force contractors to comply with health standards, when the benefits were not immediate and especially when the contractors view costs as important. There was also fear that regular medicals may take away livelihoods as workers would eventually be unqualified on health grounds to do the job. Such statements suggest a situation similar to that in the United Kingdom in 2004, where the HSE concluded that there was poor occupational health service provision in the industry despite the many hazards.1

Contractors were of the opinion that workers may not be interested in taking medical examinations because the majority of them were, in the eyes of the management, reluctant to know their health status. Whatever the case, it is workers who are exposed to occupational risks largely because they are less educated and not cautious about different preventive measures. Workers are exposed to noise risks from poker vibrators, plate and rolling compactors and excavators. They do not clean their hands properly which could cause different types of skin diseases that affect their hands and fingers. It could also cause bacterial and viral diseases and transmissions to colleagues. Some of the architects interviewed suggested that the contractors should be encouraged to frequently spray water on site in order to suppress dust on construction sites.

The limitations of the study were that the views of the workers on sites were not considered. Further, the study was limited.
to the current running projects in Gaborone only and not all other private consultants and clients considered.

CONCLUSION AND RECOMMENDATIONS

Findings of this research give the impression that little is being done to reduce the toll of work-related ill health. In the absence of government intervention and controls, there seems to be a lack of interest on the part of the Botswana construction industry to establish appropriate mechanisms to address occupational disease management. A positive change of attitude is vital. This study has identified the need for appropriate OH&S programmes. Since most interviewees from the contractors’ side cited the costs involved as being a deterrent to implementing health management, it appears it would be very difficult to convince managers of the benefits of occupational health programmes as they perceive these as time consuming and costly.

This exploratory study has highlighted the level of awareness of occupational diseases associated with construction and reflected the views of construction practitioners. Thus the industry should start improving awareness levels, including revising legislation to not just have names in the legislation, but also to identify causes and control measures. At the workplace level information is needed on the nature of the hazard, where it is likely to be encountered, and the available options for risk control.

Conditions of contracts used in construction should address H&S just as they do quality and cost. This will assist many contractors and designers to address OH&S during the execution of projects. Botswana’s construction industry is highly populated with small- and medium-size contractors, which, in most cases, have no or limited capacity to address OH&S. Management systems and procedures may be too much to expect from them. It is recommended that clients appoint occupational health consultants to ensure the implementation of OH&S by integrating the activities of contractors, designers, and clients. It is further recommended that collaboration among the Department of Labour, the Department of Occupational Health, industry clients and practitioners be enhanced as the institutions are already in place.

LESSONS LEARNED

- The awareness and understanding of occupation- ally-related health problems in these industries was poor, indicating the need for education within the industry.
- Safety appears to have greater importance than health problems, possibly reflecting better regulatory standards.
- There is a need for better provision of occupational health services to such industries.
- Occupational legislation and regulations for the construction industry in Botswana need to be improved.

“Contractors were reluctant to invest in the site workers as the majority of these workers were not permanently employed.”

REFERENCES