CASE REPORT

Case studies of occupational health management in the engineering construction industry

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Construction workers are exposed to considerable hazards carrying a health risk, e.g., dusts, fumes, noise and manual handling, yet there is often poor occupational health service provision particularly for subcontracted labourers. This paper presents seven case studies from large, engineering construction organizations, concerning current practice in occupational health management. The results supported the fact that data and records regarding health-related absence were limited and inconsistent, and that little existed in terms of medicals and health surveillance, particularly in the case of subcontracted workers. The main difficulties envisaged were reported to be the sizeable costs involved; the temporary and mobile work force; demonstrating cost-benefits to top management and a lack of interest amongst workers, perhaps exacerbated by the threat of lost livelihood. Managers also admitted limited health expertise and knowledge of the wider role health professionals could play in health management. Training and further research in this area are indicated.

Key words: Construction; health surveillance; management; occupational health.

INTRODUCTION

One and a half million people work in the UK construction industry and it is known that its workers are among the highest risk occupational groups for lower respiratory disease, pneumoconiosis, skin disease, musculoskeletal disorders of the back and for trauma and poisoning.1-2 In addition, the construction industry has poor occupational health service provision in the UK despite its workers being exposed to many harmful substances (e.g., dusts, fumes, gases, toxic chemicals), biological hazards (e.g., acute and chronic infections, parasites) and physical hazards (e.g., noise, heat, cold, vibration, inflammable materials, compressed air).3

Construction work is usually subcontracted by large, international organizations, to contractors who may then subcontract to smaller labour-only suppliers. Findings from previous research by the authors4,5 concerned with accident and health data in the engineering construction industry, supported the view that whilst safety was a priority for companies, health (i.e., medical examinations, assessments and monitoring systems) had not been given the same consideration, especially with regard to subcontracted labour. For example, six out of nine of the senior managers interviewed reported that pre-employment medicals were conducted for company employees (mostly white-collar workers), but only one company did so for subcontractors (usually the operatives). With regard to ongoing health surveillance, the situation was worse, with only two companies monitoring their subcontractors and then just on large projects. Whilst it is recognized that there is a statutory requirement for medicals with certain tasks, e.g., radiation workers, or health checks as a result of the Control of Substances Hazardous to Health Regulations 1994 (COSHH), generally there appeared to be no consistent approach to health surveillance, particularly for subcontracted labour.

Historically, less effort has been directed towards health matters in the construction industry in favour of the more immediate, high profile (and perhaps more
easily solvable) problem of safety. Some of the reasons for this include: health is a complex issue; long term strategies are required; benefits are not immediate and are consequently difficult to demonstrate; exposure to hazards with different health risks can be multiple and vary in nature and level; it has a low profile; the 'macho culture' inherent in the workforce; the mobile and temporary workforce and a lack of health expertise within the industry.\(^7\) Indeed, in a survey of 63 line and senior managers in the construction industry, it was found that there was a clear perception of the manager's role in injury prevention, but less clarity of their role in the prevention of ill-health.\(^7\) Also, the urgent need for effective health management is diminished by the fact that generally there is no statutory requirement for health standards to be reached (with obvious exceptions, \textit{e.g.}, radiation, asbestos and lead).

The financial burden of many occupational illnesses/disabilities is largely borne by individual victims and the general public, \textit{i.e.}, taxation pays for the costs of the actual health treatment and any allowances (temporary or permanent). For example, drawing on data from two large surveys, the costs of work-related illness in 1990 to society, victims and employers were £4.53-4.72 billion, £2.72 billion and £0.61-0.74 billion respectively.\(^8\) However, over recent years there has been a large increase in the direct costs to employers of work-related ill-health. For example, employees made three times more claims against their employers in 1993 than in 1988 across all industry.\(^8\) Reasons for this include early diagnosis of conditions, better causal identification, employee awareness of legal rights and increased trade union support in pursuing claims against employers.

Health surveillance involves the identification of the early signs of work-related ill-health through systems which include keeping health records and conducting health checks. Surveillance data are used to determine the need for occupational safety and health action and to plan, implement and evaluate interventions and programmes.\(^9\) It is widely acknowledged that in the construction industry, adequate health surveillance is not available and that early signs of work-related health problems are not identified.

There is an urgent need to address the extent, causes and management of the problem of occupational ill-health in the construction industry and to improve the health culture. This investigation develops the research reported previously.\(^5\) The aim is to establish the extent of existing health and welfare provision, health surveillance activities and health information collected and establish its use and role in developing prevention strategies.

**RESEARCH METHOD**

**Case studies**

Case studies were used to explore how companies were addressing health issues on seven UK sites. One experienced researcher conducted all of the interviews between November 1996 and March 1997. Wider surveys have been undertaken,\(^7\) but few investigations have attempted to study health management in detail.

As with the previous investigation,\(^5\) the research involved the engineering construction sector, \textit{i.e.}, the construction activities of the process, power and energy industries, where health management is likely to be most rigorous. In addition, focus on the engineering construction sector (and choice of sites) was due to availability of access through the European Construction Institute (ECI), with the justification that the performance of these large, high profile organizations is likely to represent current best practice in the UK. ECI is a pan-European and pan-construction organization comprising clients, designers, contractors and trade associations. Although job titles varied between companies, interviewees were generally corporate health and safety advisors, site health and safety

<table>
<thead>
<tr>
<th>Central questions and issues</th>
<th>Facilities (hand washing, toilets, clothing storage, treatment room, etc.)? Number of health professionals (doctor, nurse, and physiotherapist)? Trained first aiders?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and welfare</td>
<td>Pre-employment? Includes subcontractors? Health questionnaires?</td>
</tr>
<tr>
<td>Health assessments</td>
<td>Sickness absence (not accident related)? Fitness tests? Hearing tests? Central collation? Analysis of trends? Insurance claims?</td>
</tr>
<tr>
<td>Occupational health data</td>
<td>Issues of mobility of workers, a high proportion of small firms, self-employment, and the nature and levels of exposure to risk? General attitude of workers? Cost?</td>
</tr>
<tr>
<td>Health management of subcontracted workers</td>
<td>Medicals? Specific health checks, \textit{e.g.}, hearing tests, lung function tests, eye tests, etc.? Includes subcontractors? Other ways of ensuring fitness for work?</td>
</tr>
<tr>
<td>Alcohol and substance abuse screening</td>
<td>Risk assessments? Health education, \textit{e.g.}, videos, tool box talks? Human factors? PPE choice and replacement? Validation of interventions?</td>
</tr>
<tr>
<td>Other ways of safeguarding health</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1.** A summary of the central questions and issues explored during the interview dialogue
advisors, nurses and line managers on site at the time of the visit and employed by either the client or major contractor. In all cases the major contractor was the organization with overall responsibility for construction activities, but the specific contractual arrangements differed in each project.

**Interview schedule**

The interviews were semi-structured in nature, guided by carefully prepared questions and issues to be explored to reflect the basic research question, but where neither the wording nor the exact order of questions, were pre-determined. The majority of the questions were 'open-ended' for flexibility and depth of information. The interviews were also exploratory, allowing discussion around health issues to evolve. Consequently some of the interview dialogue reflected the views of experienced individuals rather than those of a particular company. A summary of the central questions and issues explored during the interviews is shown in Table 1. Copies of any relevant material such as health questionnaires, checklists, policies, etc. were gathered, site walkabouts were conducted and relevant meetings were attended to enrich information obtained from the interviews. The interviews took place over 1–2 days and were recorded on audiotape, transcribed by the researcher and then erased, assuring anonymity and confidentiality.

Several techniques were used to ensure truth-value or credibility of the work.\(^\text{10}\) Triangulation supports credibility by using multiple data sources to provide insights about the same events. For example, when considering the construction sites' health and welfare facilities, planning/proposal documents were examined and the reactions of workers, health staff and safety managers to these facilities were noted. Observation (on site) also provided further confirmation. In addition, member checking allowed the interviewees to respond to interpretations from the interview, for example, by verifying conclusions from earlier work, challenging interview summaries, providing written comments on the contents of resulting reports and by discussing the results during ECI task force meetings.

Due to the diversity of sites, project size, project stage, etc., the results are presented in the form of case studies from which points are drawn out for discussion. The details regarding project cost, manhours, etc. are not included to protect the identity of the companies. The term 'green-field site' is used when there has been no previous construction, no demolition and the building work is not within an existing facility. The sample sites indicate the range of construction activities in the UK engineering construction sector at the time of the study.

**RESULTS**

The case studies represent current practice and expert judgements of the interviewees on a range of health issues in the construction industry. This 'snapshot' account reflects the position of large, high profile organizations, which it was judged by the research team are more likely to be proactive in terms of health management. The study must be placed in this context. The range of case study sites is shown in Table 2 and general health and welfare provision on these sites is summarized in Table 3.

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**Table 2. Description of the case study sites**

<table>
<thead>
<tr>
<th>Project</th>
<th>Site</th>
<th>Duration (yrs)</th>
<th>Project stage at interview</th>
<th>Interviewees</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerStation</td>
<td>Green-field</td>
<td>4</td>
<td>Year 3</td>
<td>Client line manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Site health and safety manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Site RGN</td>
</tr>
<tr>
<td>Sewage treatment plants</td>
<td>Green-field</td>
<td>3</td>
<td>Year 3</td>
<td>Two site safety officers</td>
</tr>
<tr>
<td>Process plant</td>
<td>Green-field on existing facility</td>
<td>2</td>
<td>Year 1</td>
<td>Corporate health and safety advisor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Site manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Site safety advisor (with responsibility for health)</td>
</tr>
<tr>
<td>Pipe-laying</td>
<td>Green-field</td>
<td>1</td>
<td>Start</td>
<td>Site safety manager (with responsibility for health)</td>
</tr>
<tr>
<td>PowerStation (maintenance and outage)</td>
<td>Existing site</td>
<td>Ongoing client operation</td>
<td>N/A</td>
<td>Corporate health and safety advisor</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>9</td>
<td>Year 9</td>
<td>Site health and safety officer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Occupational health nurse</td>
</tr>
<tr>
<td>PowerStation</td>
<td>Green-field on existing site</td>
<td>2</td>
<td>Month 10</td>
<td>Client safety and quality manager (with responsibility for health)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Corporate health and safety manager</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Site safety manager (with responsibility for health)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Site RGN</td>
</tr>
</tbody>
</table>

N.B. Unless otherwise stated, interviewees were employees of the major contractor.
Table 3. A summary of health and welfare provision on the case study sites

<table>
<thead>
<tr>
<th>Case study site</th>
<th>Site health facilities</th>
<th>Site welfare arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A large, fully equipped treatment room set up by the main contractor with a full-time RGN. A retained occupational health physician (0.5 days per 2 weeks).</td>
<td>In line with and above regulations (WCs, sinks, canteen, drying rooms).</td>
</tr>
<tr>
<td>2</td>
<td>No Medical Centre or medical/health professionals.</td>
<td>In line with and above regulations (WCs, sinks, canteen, drying rooms).</td>
</tr>
<tr>
<td>3</td>
<td>Client-run Medical Centre with medical staff (RGN, physiotherapist and occupational health physician).*</td>
<td>In line with and above regulations (WCs, sinks and drying rooms).</td>
</tr>
<tr>
<td>4</td>
<td>No Medical Centre or medical/health professionals.</td>
<td>Mobile facilities (WCs and sinks) — mobile drying rooms and showers were difficult to arrange.</td>
</tr>
<tr>
<td>5</td>
<td>Client-run Medical Centre with full-time occupational health nurse.* A physiotherapist and occupational health physician also visited regularly.*</td>
<td>Excellent welfare facilities including hand wash areas, eye wash areas, showers, canteen and industrial chaplain. Contract workers had their own building with canteen, offices and car park.</td>
</tr>
<tr>
<td>6</td>
<td>Client-run Medical Centre* Variability in provision for individual contractors suspected.</td>
<td>In line with and above regulations (WCs, sinks and drying rooms).</td>
</tr>
<tr>
<td>7</td>
<td>A fully equipped clinic set up by the main contractor with a full-time RGN.</td>
<td>In line with and above regulations (WC’s, sinks, lockers, and canteen), however no showers or drying rooms.</td>
</tr>
</tbody>
</table>

* This facility was not available for use by contract staff except for more serious accident injuries.

N.B. All sites had first aid facilities, trained first aiders (in line with and above regulations) and emergency accident/health procedures.

Data collection and collation

Considering health data, all of the sites routinely collected first aid, over-3-day lost time injury data and RIDDOR reportable accidents and illnesses. Only one client and one of the major contractors were starting to collect health-related absence data on their subcontracted workers. Both of these organizations felt that there was not yet 100% reporting of occupational health-related lost time and that the system relied on the honesty and efficiency of individual contractors. These data were forwarded to a central location for collation, analysis of sickness absence trends and subsequent reports. The other four major contractors only collected this information if the individual employee visited the nurse (where available). A client representative interviewed indicated that currently there were no clear systems or frameworks in place to monitor health in either their own employees or their contractors.

This research investigated the health surveillance procedures on the case study sites and within case study organizations. In some cases operatives or company staff had medicals or health checks on other projects or when working for other organizations, usually to fulfil the statutory requirements for specific workers, e.g., radiation workers. However, for the majority of subcontracted workers there appears to be no consistent approach to health management, emphasizing the need for an industry-wide standard.

Case study 1 (400–1,400 employees). The interviews took place during the final year of a four-year green-field construction site for the building of a PowerStation where the client was closely involved on site. Interviewees were a client line manager, the site health and safety manager and a Registered General Nurse (RGN) with 5 years experience in occupational health. The latter two were both employed by the main contractor.

The full time RGN and retained occupational health physician were available to all site employees. All site employees completed a health assessment questionnaire at the start of their employment and any health concerns admitted were followed up. Pre-employment medicals and health surveillance were not undertaken for site employees. The site nurse suspected that the majority of subcontracted workers concealed information regarding their health to avoid questions raised about their fitness for work, despite confidentiality being assured. It was considered that her role was more reactive than proactive, i.e., workers visited her in the clinic for treatments. She did not attend health and safety meetings or accompany health and safety professionals on site walkabouts, although she felt that her role could be more proactive, e.g., she could advise on manual handling, sun protection, health risk assessment and check the welfare facilities (toilets, wash areas).

This site nurse thought that generally workers did not have an interest in health, e.g., protecting their skin from irritants, but that given time, encouragement and confidentiality workers would discuss their concerns. In support of this, it had been noticed that visits to the first aid facility by site managers, workers,
etc. had increased and there was less stigma attached to them.

Regarding the management of health, difficulties were expressed as being the high cost to the industry, overall monitoring and maintaining confidentiality.

Finally, when asked for ideas concerning how the health of subcontractors could be managed, a form of 'swipe-card' system that workers carried, containing details of medicals, surveillance, work history, etc. was suggested.

**Case study 2 (maximum of 600 employees).** The interviews were carried out during the final year of a three-year green-field construction site of two sewage treatment plants. The client was not closely involved on these sites. Interviewees were the two site safety officers (with responsibility for health) employed by the main contractor.

No occupational health nurse was appointed to these sites, although the health and safety managers felt that, in retrospect, this was an omission. These projects involved work on contaminated land and airborne bacteria had been identified as a health risk. From the interviewees’ perspective it was suspected that in some instances workers were abusing ‘the seriousness’ that was placed on this bacteria to take time off from work and they considered that a nurse may have been able to contribute to the validation of these claims. Pre-employment questionnaires, medicals or health surveillance were not undertaken for site employees.

The lifestyle of the ‘travelling workers’ living away from home, which involved alcohol consumption, late nights, poor food and accommodation lead one of the managers to conclude that generally construction workers did not take care of their health and that attitudes were not changing. However it is of interest that on this particular site with the risk of airborne bacteria, workers were very diligent at washing their hands, wearing protective clothing, dressing all cuts, etc.

The high cost inherent in health management was the main concern of the safety officers, although evidence for this was anecdotal. Construction is a competitive industry and there was a fear that the UK could fall behind countries that do not have such ‘restrictive’ practices. In addition, the client would ultimately pay and as clients are generally the service user. There was also a belief that it was unrealistic (as well as too expensive) for the industry to be managing the general health and well-being of this transient workforce: individuals needed to take responsibility for their own health.

Concerning the future management of the health of their contractors, the idea of establishing a central, computerized system was thought to be a possible solution. Subscribing companies would pay a registration and an annual fee for the central management of the health of the construction workforce. This could take the form of a ‘passport’ type system where medicals, surveillance, check-ups, health training, etc. were routinely co-ordinated. As all companies were ultimately using the same pool of labour, the current employer of an individual worker would pay the costs of any medicals due during that employment.

**Case study 3 (50–60 employees).** The interviews took place halfway through a two-year, new process building construction project on the existing factory site where the client was in close contact. Interviewees were all employed by the main contractor and comprised a corporate health and safety advisor, the site manager and the site safety advisor (with responsibility for health).

The client-run medical centre employed a full-time RGN and an occupational health physician one day a week for their own employees. However, this facility was only available to contractors for more serious accident injuries, which the trained first aiders on the construction site were unable to handle. Contractors were not encouraged to use the centre for other health reasons, medicals or health surveillance as this was not included in the project costs and would therefore be an additional expense for the client. Pre-employment questionnaires, medicals or health surveillance were not undertaken for workers on this construction site.

Once again the attitude of workers to their health was felt to be poor, i.e., not interested in sun protection, skin care, good lifting practice, etc. It was thought unlikely that workers would take the initiative to arrange their own medical assessments/health surveillance with occupational health professionals. Although in one manager’s experience, older, fit workers would be likely to have a medical, as it would be in their interest to prove their fitness for work.

It was expressed that any health management system would be difficult to implement due to the suspicion that it would create regarding possible job loss: prospective employees may conceal information about their health in order to secure employment.

Once again the creation of a ‘passport’ system was cited as the way forward for the future management of health. For example, extending the ‘Safety Passport Scheme’ managed by the Engineering Construction Industry Training Board (ECITB) on behalf of clients, to all workers and to include health as well as safety training information.

**Case study 4 (150–300 employees).** The interviews took place during the early preparation and administration stage of a 12-month green-field site-laying 27 km of gas pipeline with the client on site. The individual pipes were 18 x 1.5 metres and weighed 14 tonnes. The site safety manager (with responsibility for health) was interviewed.

There was no plan to employ an occupational health nurse or to install a treatment room at the site base. As the work on this site was distributed along the pipeline, and continually changing location, efforts
were being made to ensure trained first aiders and medical kits were available to each team of workers. Pre-employment questionnaires, medicals or health surveillance would not be undertaken for workers on this site.

This manager felt that the specialist group of 'high risk' workers involved in pipe-laying took a greater interest in their health, than those in general engineering construction, with regard to wearing sun protection, clothing, ear protection and gloves. However, it was considered unlikely that workers would organize medicals or health monitoring for themselves.

Once again there was a fear that the management of health in the transient work force would be difficult and expensive, such that the UK may lose its competitive edge with companies/countries not requiring or achieving such high standards in health management.

It was established that these pipelayers were mostly a stable work force, as the same team moved from site to site for employment. Consequently the management of health in this group of workers and similar groups (e.g., tunnellers) was perceived to be less complicated.

Case study 5: (600 employees plus 100–150 contract staff). The interviews took place in an existing PowerStation. It was a client operation with contractor involvement in routine maintenance, breakdown maintenance and outage work (every 18 months, whereby the plant was shut down for a more thorough service). A corporate health and safety advisor, the occupational health nurse (Diploma in Occupational Health) and a site health and safety officer (all employed by the client) were interviewed.

This client ran a fully equipped medical centre for their own employees with a full-time occupational health nurse, a temporary RGN when required and a physiotherapist 1.5 days/week. A local GP and the company Chief Medical Officer also visited monthly. However, once again this facility was not available for any contract staff except in the case of a serious accident or acute illness. Contractors requiring medicals, etc. had to visit local GPs. Pre-employment questionnaires, medicals and health surveillance were undertaken for client employees and for certain categories of risk workers, e.g., radiation workers and heat-stress workers. The view was put forward that health professionals addressed very different issues to site safety officers, therefore the occupational health nurse's attendance and contribution to the Health and Safety Committee meetings was valued.

It was considered that workers on this and similar sites with possible exposure to radiation took an interest in taking care of their health.

Problems regarding the health management of contracted workers were perceived to be the costs involved, quantification and the need to persuade top management to build for the future with up-front investment. The increased modular nature of the work would also result in more contractors and less control over the work force. It was felt that health should be costed into a project but that these costs would be high as medicals and surveillance are time consuming and cannot be rushed.

A way forward for the management of health was once again thought to be a 'swipe-card' system similar to that already used by this company for radiation dose reviews.

Case study 6 (6,000 contract employees at the time of the interview). The interviews took place in the final year of a nine-year tunnelling project with close client involvement. In addition to the above, the project also employed 1,000 personnel on the project management team. The client safety and quality manager (with responsibility for health) on this project was interviewed.

This client ran its own fully equipped medical facility for employees with doctors and nursing staff. Contractors were responsible for their own provision of health care on site but the client health and safety advisor suspected a wide variation in standard of care, i.e., medical facilities, health surveillance offered. The client did not insist on contractors' compliance with pre-set standards/procedures of health management (with the exception of statutory requirements). It was also highlighted that their own medical staff were probably not familiar with dealing with the occupational health problems specific to construction activities, as they mainly dealt with office workers. Equally, it was felt that construction management professionals generally do not have a good appreciation of occupational health hazards and therefore were unable to appreciate the benefits of 'expensive' experts, i.e., doctors and nurses. For example construction managers may feel that they do not need the medical profession to be involved in risk assessments, manual handling training, hearing tests, etc.

Once again the work environment was regarded anecdotally to be a 'macho' culture, but also that gradually workers were becoming more aware of the need to take care of their health, e.g., by wearing gloves. Health education was thought to originate from increased general public awareness rather than from any management activities. It was considered that employers do have a role in prevention of occupational ill-health but it was admitted that currently management awareness/interest was poor.

Several issues were raised regarding the problem of health management. Firstly, it was difficult as a client to enforce high standards for health provision on contractors, when the benefits were not immediate and with the need to cut costs in the industry. Also, as a client it would be necessary to balance the desirable outcomes with what the whole industry could actually deliver. There was also fear that regular medicals may take away livelihoods (e.g., workers with dermatitis, deafness or back pain) and that eventually there would be no one to do the job. Finally, problems in persuading designers to consider health issues in construction
design when safety was still high on the agenda were anticipated.

It was pointed out that the framework for health management was already in place (from the legislation) and therefore the way forward was considered to be slow 'war of attrition' in a similar way to the management of safety, i.e., continual communication to workers and their managers, emphasizing the importance of occupational health. As a client they were only just beginning to take the initiative and consider health, e.g., by focusing their site Safety Management Award Scheme on health. In addition, they were examining the effectiveness of their management of health in their own employees, introducing medicals at the start and end of employment, and were generally raising health awareness. This approach would eventually provide them with the skills to enable them to review how well contractors were managing the health of their employees. The difficulties this could bring were appreciated but they felt that ultimately contractors would be expected to manage their subcontractors' health and that the client's role would be to advise and set standards. A concern was however expressed that with better records companies could be opening themselves up for litigation and that this may be seen by some as a disincentive to take a more proactive role in health surveillance.

Case study 7 (maximum of 550 employees). The interviews took place approximately halfway into a 21-month green-field construction site involving the extension of an existing PowerStation. A corporate health and safety manager, the site safety manager (with responsibility for health) and the RGN (all employed by the main contractor) were interviewed.

The clinic employed a full-time RGN that all site employees could visit whether the health problem was work-related or not. Once again her role was more reactive than proactive. As a female in a mainly male environment and unused to construction activities, she admitted that she did not feel comfortable walking around the site unaccompanied. Once again pre-employment questionnaires, medicals or health surveillance were not undertaken for workers on this site.

Workers were reported to exhibit variable attitudes and behaviours with regard to health, which was felt to be due to individual personalities rather than age, race, etc., although awareness of specific risks was thought to be improving, e.g., wearing gloves to protect the skin. With regard to medicals, it was indicated that workers who were 'fit' would co-operate, however, workers with any health problems would not, because of fear of job loss.

Cost was once again raised as the main concern regarding health management of this 'maze' of contractors with its mobile work force. Margins were already considered tight in the industry and there was a fear that the requirement of pricing health into contracts could reduce the competitive edge. It was admitted that it was unlikely that health management would be industry lead and that more specific legislation would be required, which clients/major contractors in turn would need to enforce.

A possibility for the future management of health was suggested involving the clients and major contractors sharing 'core contractors' to form a nucleus of steady workers. Costs would then be shared to maintain these workers with regard to medicals and surveillance. It was expressed that the industry needs to be seen to care about individuals and to be doing something for their benefit.

Alcohol and substance abuse

As a possible health issue, companies were asked the extent of screening for alcohol and substance abuse. Whilst all the organizations had policies to cover alcohol and substance abuse, none conducted post-accident, random or pre-hire screening on their construction sites. Although these interviewees were unaware of the extent of the problem, they were uncomfortable about enforcing any formal surveillance system (with breathalysers/blood tests) due to concern over breaching civil rights. However, should alcohol be discovered on site or an employee be suspected of consuming alcohol or drugs, they would immediately be removed from site and disciplinary procedures would commence. This fact is specifically addressed during the induction of workers. Individual alcohol and drug intake (with its wider effects) were only discussed as part of medicals, and as previously reported, the large group of subcontracted workers were not covered by this.

DISCUSSION

This paper considers seven case studies of the interviewees' perceptions of the existing situation with regard to health management. In so far as they represent the views of the UK engineering construction industry, the implications are striking. Data/records collected regarding absence and health in subcontracted workers were limited and inconsistent, with little systematic analysis. The majority of companies only examined the data if a problem had occurred. Since data and records are an important part of any health management system, it is not surprising that prevention strategies (health assessments, medicals and health surveillance) had not been developed for workers at risk.

Pre-employment questionnaires, medicals and health surveillance were not widespread among these organizations for either their own staff or any contracted workers. In a postal survey of 5,000 employers from across all industry, it was found that only 31% of companies who had identified at least one serious hazard at work were performing pre-employment medicals and 29% were carrying out health surveill-
It is suspected that figures for the construction industry would be even lower.

As identified in other work\(^7\) these case studies also found a clear perception of construction managers' role in safety and the prevention of injury, but less clarity regarding the prevention of ill-health. Nevertheless, managers did have concerns about the health of their work force and were aware of the health risks in construction activities. The familiar and practical issues of resourcing occupational health management in the competitive construction environment; the numbers of temporary workers; the multi-contracted and mobile work force and a lack of interest by workers, possibly fuelled by the fear of job loss, were all raised as barriers to solutions. However, despite the often quoted 'mobility' and 'high turnover' of subcontracted labour, the work force mostly consists of the same group of core workers, who have been in the industry for years, rotating between contractors and projects.\(^12\)

It was argued by respondents that there needs to be a balance between what is desirable and what the industry (including the smaller contractors) can realistically begin to deliver.

The practice of employing an occupational health nurse specifically for construction site workers was not consistent. Two of the construction sites had a dedicated RGN for use by all employees including contracted workers, but although experienced in occupational health, these nurses did not have formal qualifications in occupational health. Three of the sites had a client-run Medical Centre which could only be used by contracted workers in emergencies and the other two sites had no health professionals, only trained first aiders. Although site size is a factor, one health and safety advisor cited that a general lack of understanding of health hazards and the failure to recognize the potential of the occupational health nurse in health and safety on a construction site, could be reasons for this. Interestingly, research\(^11\) has found that a doctor or nurse performed only 26% of 'inspections for readily detectable conditions'. Also, although 53% of 'enquiries about symptoms, inspection and examination' involved doctors or nurses, 38% of these were attributed to doctors and only 14% to nurses. It seems that many organizations (not just construction) have a limited perception of the extended role of the occupational health nurse in health and safety on a construction site, could be reasons for this. It is believed that this exploratory study has provided some insight into the issues regarding occupational health management in the engineering construction industry reflecting the views of experienced individuals within the industry. It has also highlighted the need for a larger, more systematic and analytical study in
this area, for example auditing health record keeping, health surveillance practices, expenditure on the site occupational health service, attendance at health and safety meetings, training in health hazards and conducting fitness for work assessments.

CONCLUSIONS

1. Data and records regarding health-related absence were limited and inconsistent on the case study sites, particularly for subcontracted workers. It is suspected that the situation across the broader construction industry is likely to be worse.

2. These case studies illustrate that little exists in terms of pre-employment questionnaires, medicals, health assessments and health surveillance, once again particularly for subcontracted workers.

3. The main difficulties envisaged in occupational health management were the potential large costs involved; the sizeable, temporary and mobile work force; demonstrating cost-benefits to top management; and the lack of interest among workers, perhaps due to possible loss of livelihood.

4. The case studies confirmed limited health expertise among managers coupled with a lack of understanding of the potential role of health professionals in construction organizations, e.g., health surveillance, health and safety committees, specific health training, fitness for work and sickness absence management.

5. A lack of health professionals (with formal occupational health qualifications) on site was confirmed.

6. Research in the area of health management of construction workers is urgently needed to provide guidance to the industry.

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