

OLDER CONSTRUCTION WORKERS: NEEDS AND ABILITIES

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Construction presents specific problems for vulnerable workers, be they younger, older or migrant workers (Dainty et al, 2007). This paper concentrates on the needs and abilities of older workers. In addition to the health problems associated with normal ageing, heavy physical workloads have been shown to exacerbate this physical decline. Construction is recognised as having higher rates of fatality, injury and illness than most other industries. Many workers in industries with a heavy physical workload are forced into early retirement due to injury and ill-health. Although there is data available to show age-related relationships with a range of occupational ill-health conditions in construction, little has been done to explore workers' personal perceptions of ageing. The SPARC (Strategic Promotion of Ageing Research Capacity) initiative funded a project at Loughborough University to explore the needs and abilities of older construction workers (Leaviss et al, 2008). The pilot research used qualitative methodology to attempt to gain a rich understanding of some of the issues that are perceived to impact upon the health and career paths of older workers. In-depth semi-structured interviews and focus groups were held with participants from several areas of the industry. A range of issues have emerged that are considered to affect older workers in construction have emerged from the project and are wide ranging, acting at both a macro and micro level within the industry. Client demands, construction company employment policy and design considerations act alongside specific work processes, employee uptake of safe practice, and availability of tools and equipment to create an environment which can be hostile to the older worker. The contribution of this work was as the foundation of Loughborough's older construction worker research that is continuing with the development of occupational ill-health simulators as training aids for younger workers and empathy aids for designers (Cook et al, 2009 & 2012 and Nyateka et al, 2012) and workplace design (Williams et al, 2011).

Keywords: ageing workers, health, safety

INTRODUCTION

An ageing population

Worldwide demographic trends show an ageing population (United Nations 2005). Ilmarinen (2006) states that "longer life expectancies and low birth rates together impact on the demographics of the workforce. The proportion of 50 to 64 year-olds in the workforce will be double in size compared to workers younger than 25 years (35% versus 17%) in the EU15 (the first 15 European countries to join the union) by the year 2025.

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Retaining the older worker in the workforce will not only become a necessity, but it is also beneficial to industry. Older workers accumulate invaluable job-related knowledge and experience, and it should be desirable for employers to retain this skill base.”

Physical ageing

Normal ageing produces declines in physiological fitness in gross and fine motor performance, cognitive abilities (reaction time, memory, decision making), sensory perception (auditory and visual), and aerobic capacity (Kowlaski-Trakofler et al, 2005). These age-related declines result in difficulties for the older worker, particularly in tasks requiring joint mobility, manual dexterity, muscular strength and endurance. These effects are more apparent for tasks with a heavy physical nature, with ability to perform such activities reducing with age. “Muscular strength tends to peak between the second and third decades and remains the same until about 45-50 years of age in men” (Evans & Hurley, 1995), it then “starts to decline from about the fifth decade at a rate of 12% to 15% per decade until the eighth decade.”

Similarly, aerobic capacity declines to 70% of peak by age 65. Ageing also produces postural limitations, with older adults experiencing difficulty stooping, crouching, bending and reaching. Herberts et al (1980) showed shoulder muscle fatigue to be a specific concern for older workers engaged in tasks requiring elevated arm activities.

Ageing in the construction industry

The construction sector is one of the largest employers in the EU. Eurostat data (Eurostat, 2009) showed that “construction activities in the EU-27 provided employment to an estimated 14.8 million persons in 2007 (some 11.5 % of the non-financial business economy workforce)”. In addition to these official figures, the true number of employees in construction work may be far higher, as many workers are believed to go undeclared (Mateman & Rencoy, 2001).

The HSE’s advisory group CONIAC (2009) states that “over a nine year period from 1996/7 to 2004/5 in UK construction the average proportion of fatal injuries suffered by 60+ workers, for those cases where age is known, is 11.6%. Over the same period the proportion of all workers in the 60+ age group averages 5.7%. This raw data suggests that the potential for fatal injury amongst the 60+ age group is twice that for construction workforce overall.”

It is well-documented that construction workers are at greater risk of a range of work-related health disorders than many other industries and the population as a whole (see Kines et al, 2007, & Arndt et al, 2007 for reviews). Common conditions include musculoskeletal disorders, lung disease, hearing difficulties, and fractures and sprains.

The nature of construction work presents specific problems for the older worker. In addition to the health problems associated with normal ageing, heavy physical workloads have been shown to exacerbate this physical decline. Whilst a low level of physical exertion can have positive training effects on physical capacity (Schibye et al, 2001), heavy occupational physical activity over many years causes this capacity to deteriorate (Nygard et al, 1991). The most common form of work-related health complaints are musculoskeletal disorders (MSDs) (HSE, 2002). Physically strenuous work and the moving, lifting and carrying of heavy weights are associated with a significantly higher risk of back pain and MSDs (Schneider, 2006).

Construction has high levels of early retirement due to permanent disability or ill-health: Guberan and Usel (1998) studied early retirement rates in a range of occupations in

Geneva. Of all the occupations studied, construction had the lowest rate of survival in work without permanent incapacity at aged 65, at only 57%. This compared with an average across all industries of 75%. A study of early retirement in construction workers in Ireland (Brenner and Ahern, 2000) showed the most common disabilities leading to early retirement on health grounds were cardiovascular disease (31%), hypertension (16%) and musculoskeletal disorders (30%). These studies suggest that the construction sector is not a hospitable environment for the older worker.

The current recession in the UK and across much of the world is causing a significant downturn in activity. This has eased the labour shortage in the short term; however, there is anecdotal evidence that many older experienced workers have willingly or unwillingly left the industry, thus storing up a future skills shortage when the upturn finally comes.

Easing the workload

Problems caused by a heavy physical workload are being addressed through the design and use of specialised equipment (e.g. power or hand tools, access equipment such as ladders and scaffold) and the redesign of work processes. The effective interaction of process and equipment should optimise work posture and reduce physical stress (Vedder & Carey, 2005). Williams et al (2011) have developed a web-based tool to aid workplace design to facilitate inclusion and a better working environment for all ages.

Three main solutions to MSDs include: reducing extreme joint movement (keeping motion within acceptable range); reducing excessive force (using mechanical aides); and reducing highly repetitive tasks (use of power tools) (McMahon & Philips, 1999). Effective implementation of these strategies can lead to the reduction of work related injury and ill-health and may lead to a reduced likelihood of early retirement.

There are financial benefits to reducing work-related ill-health in construction. HSE (2011) estimate the cost of work-related accidents and ill-health in the UK construction industry is £1216 million. A previous study (HSE, 1997) estimated that they accounted for 8.5% of project costs. This included the costs of delays, absenteeism and health and insurance charges. It is estimated that occupational ill-health and injury may be costing the EU construction industry nearly €75billion a year (OSHA, 2004). Early retirement may add to these costs, and the cost of retirement may often be borne by the State.

The SPARC research

The aim of the SPARC study was to gain a richer understanding of the specific needs and abilities of older workers in construction, as perceived by those in the industry. It was beyond the scope of the project to examine in detail the risk factors for older workers in all trades and tasks and devise solutions accordingly. This preliminary research used qualitative methodology to make an initial exploration of the research questions. It explored the personal perceptions of a broad range of industry participants, in order to examine in more depth the issues surrounding growing old in construction. It also sought to identify potential solutions to some of the problems experienced specifically by older workers. This work is now being taken forward in a project funded by AGE-UK.

METHODS

Interview structure and data collection

Data were collected via in-depth semi-structured interviews and focus groups to explore perceptions of the needs and abilities of the older construction workers, based on:

- What health problems are associated with older workers?
- What workplace equipment and materials are relevant to the older worker?

- What are the barriers to uptake of safe practice in the older worker?
- What other issues are of concern to older workers in construction?

Participants were encouraged to expand on issues that were of particular interest. Interviews were conducted in the workplace; some in site offices, others incorporated into site walkabouts. It was therefore not possible to record all interviews – where recording was possible, all material was fully transcribed, verbatim.

Participants

Participants were drawn from a wide range of industry backgrounds (Table 1). Access to older workers was gained through H&S managers of large construction companies.

Table 1: List of participants

Job description	Number (Total n=55)
Health and safety managers/consultants	8 (private sector 6, public sector 2)
Site managers	5
Older workers	23 (of which 4 retired)
Union Representatives	2
Younger workers	4
Equipment/materials hire/design	6
Other	7 (inc. company owner, ageing expert, surveyors, training and health bodies)

Age of older workers: The literature generally has that the age of an ‘older’ worker as 40+, but it was felt by many of the health and safety managers that this was too young. The study therefore aimed to sample those workers aged 50+, although 3 workers were in fact in their 40s. The average age of the older workers in the study was 56.5 years (range 41-64). In addition to these 4 retired workers were interviewed, average age 74.5 (range 72-79). All interviewees had 10 years or more construction experience.

Analysis

Qualitative data was examined and a thematic analysis was conducted to identify emerging issues. Data was reduced by coding around main themes corresponding with interview questions, then searching for emerging themes within these categories.

RESULTS

A range of issues that are perceived to affect older workers in construction have emerged from the project and are being investigated further through on-going work. We have found these issues to be wide ranging, acting at both a macro and micro level within the industry. Key issues to emerge are summarised as follows.

“You get to our age – 50 odd – nobody would want us...” (Older worker)

Positive Value

The value placed on older workers should not be underestimated. Both management and workers recognised the value of retaining older workers within the industry.

Table 2 Value: Older workers in construction

Positive Value	Negative Value
Trade skills and knowledge	Lack of fitness
Experience	Lack of safety behaviours
Work ethic	Resistance to change
Workmanship	Cost to project

“The strength of any organisation whether it’s a multi-million pound company, the Royal Family, a football team...the strength of that organisation is that if you were to remove the top layer for one reason or another, how competent are those lower down able to move up and fill their places?” (Clerk of the Works)

Skills – Older, experienced workers bring with them invaluable knowledge and skills of their trades. A significant decline in apprenticeships in the construction trades has caused an erosion in the skill base. Younger workers are not being attracted into the industry. As older workers retire, they are not being replaced by similarly skilled workers.

“Its not the best trade to be in. I can see why the younger ones don’t want to come in. They just lose heart, just lose heart in it. I mean its hard graft.” (Site manager)

Table 3 Perceived reasons for lack of young workers entering construction

Younger workers are idle
Construction work is demeaning to them
Doesn’t occur to them that construction is a viable option
Younger people want easy money
Younger people don’t want to be told what to do
Only see construction work as stop gap to something else

“People...they’re retiring and skills are not getting passed on anyway so they just make the job as simple as they can to suit the ability of the person that’s doing it. Rather than bring the person up to the standard they’re lowering the standard to the person.” (Older worker)

Work ethic: Older workers are perceived by both management and workers as having a better ‘work ethic’/mentality. For example they will present for work even when sick where a younger worker would not.

“Never had a day off sick. My time keeping is ace.” (Older worker)

Workmanship: Older workers are perceived to take greater pride in their work and to produce work of a higher quality.

“You get an older guy on the job – he may take longer but you get the quality. The younger guy he just wants his money.” (Small construction company owner)

Negative Value

The nature of construction work has changed. An increased reliance on pre-fabricated materials e.g. staircases, roof trusses and ever-tight profit margins have created a working environment that is hostile to the older worker.

“It’s hard work, yeah, and the older you get, the harder it is.” (Older worker)

Lack of fitness: Older workers are perceived to be slower and unable to keep up the pace set by the younger workers. The ability to hit targets is crucial for construction companies/site managers who need to complete jobs on schedule or suffer financial consequences. This negative is perceived to outweigh the positive attributes offered by the older worker.

“He’s not mobile for starters. I don’t mean getting in his car but he’s not as physically fit as he would have been as a younger person. And that brings on its own problems whether its mental agility or physical ability - and the ability as well under the mental side of it to assimilate information correctly.” (H&S manager)

Macro-level Issues

The organisation of the construction industry as a whole is perceived to have implications for creating a hospitable working environment for older workers.

“It’s an industry that’s insecure...it’s an industry where you have got every single different employment status you can think of, so it’s a minefield out there.” (H&S Consultant)

Direct versus indirect labour – The employment tenure of older workers was thought to have a direct effect on their experience of work in construction. Many construction firms employ workers through sub-contractors and many workers are therefore self-employed. Employers who do employ direct labour are perceived to ‘look after’ their older workers, to find them less physically demanding tasks when necessary, and are obliged to provide ‘sick pay’ when a worker is unable to present for work through ill-health/injury. Conversely, being self-employed and finding work through sub-contractors is perceived to have a negative effect on the experience of older workers. Workers are chosen on the basis of being fit and able to complete the job quickly. Allowances are not necessarily made for the slower pace of the older worker. If a self-employed worker is unable to work through ill-health, they do not get paid, and must rely on private insurance or state benefits. Many older participants reported that they would prefer to be ‘on the books’.

“If there was somebody there that had been there donkey’s years then they would probably find him a lighter job. I mean I know bricklayers that have had a heart attack and they’ve finished up in the joiner’s shop as a labourer.” (Older worker)

Client responsibilities: The construction industry is highly competitive. This financial pressure results in extremely tight margins. There was a perception amongst some participants that these small margins make it financially impossible to make allowances for the physical ‘slowness’ of the older worker. A slow worker was perceived to cost more money than a fast worker, and some participants felt that the competitive tendering process creates a reluctance by the main contractors to bear this cost. It was suggested by several participants that the only way to address this issue would be for the client to bear the cost.

“I’m not saying clients are the whole answer but they really are a big part of it.”
(H&S manager)

“It depends on the people with the money. If you’ve got money then you can have the job done as you want it.” (Older worker)

Pay structure: - Participants reported that much of the construction industry relies on ‘bonus/price work’. This type of payment system may appeal to younger, physically fit workers as there are financial rewards for speed. There was a perception amongst some participants that the quality of the work suffers through this type of payment system. Many older workers reported that they would prefer a ‘day rate’ because the focus becomes on quality rather than speed.

“If a guy is paid by productivity and he’s going up and down that roof ladder like a fiddlers elbow – If he’s an old guy and he’s immobile he’s not going to earn a crust.”
(H&S manager)

Employment flexibility: - Many of the older workers who participated in this study want to stay in the industry. However, as they get older many prefer to work more flexibly, either working part-time or on day rates due to the high pressure of price-work.

“They don’t want you on day rates. We couldn’t come here and get a job on day work, laying bricks or blocks or whatever – they won’t have us.” (Older worker)

Micro-level Issues

Preventing chronic ill-health and injury in construction workers is vital to reducing early retirement from the industry.

Attitudes to Health and Safety: - Workers accept ill-health and injury as part of the work.

“It’s just the job.” (Older worker)

Many participants reported that early retirement is currently an accepted part of the industry. Participants reported ‘expiry dates’ for older workers in construction – i.e. the age at which the average worker in a specific trade would have to retire from the industry through ill-health. Many workers felt that the health and safety regulations are ‘over-the-top’, and prevent workers from doing their job fluently. There was an attitude amongst workers that nothing could be done to make the job less physically strenuous, and that the job is inherently hard. However, when encouraged to talk more about their specific job tasks, older workers were able to think of improvements to their own job tasks that could otherwise cause or exacerbate physical injury or ill-health. Management sometimes perceived older workers to be less likely to follow safe practice for self-protective behaviours, e.g. wearing PPE and it is possible that these issues are linked.

“We’ve invented some of the most fantastic things in the world and they’ve all come from this country but there’s still a reluctance on behalf of some people to make life easier for themselves.” (Clerk of Works)

Health problems and potential interventions are trade specific. For example:

- **Joiners** perform tasks that require repetitive motion e.g. hammering, use of screwdrivers. These tasks can cause problems in the joints e.g. tennis elbow. These tasks can often be made easier with power tools. Battery drills can be used instead of pump screwdrivers. Nail guns can be used instead of hammers.
- **Bricklayers** are constantly manual handling heavy materials. This results in musculoskeletal disorders. Manual handling aides and lifting devices can make some of this work easier. However, older workers would prefer lighter materials rather than to use lifting devices which are regarded as a hindrance to fluency of work. Forklifts and other mechanical handling devices are now more readily available to assist with lifting tasks. However this only eliminates the need for a labourer to carry materials to the bricklayer. This gives the bricklayer the additional job of loading/unloading, creating an extra physical burden.
- **Plasterers** perform wet work that can result in rheumatic problems. Repetitive motion results in aches and pains. Newer materials are available that reduce the amount of wet work that is required for the job, e.g. dry lining. Plasterers are reported to have the earliest ‘expiry date’ as the work is so physically demanding.

Barriers to intervention

“If you can cut a corner you will do – it’s as simple as that.” (Older worker)

There are many perceived barriers to the effective employment of interventions designed to alleviate the physical nature of the work. Personal responsibility: Some workers are reluctant to wear PPE or use appropriate equipment as they felt this affects how they do the job. In addition, it was perceived that many work processes or pieces of equipment that help with the physical side of the job do not help with the financial side.

“It saved a lot of lugging but you’ve got two men working it and while you’re working it you’re not laying...and you’re not earning, you’re not earning while you’re getting your stuff up.” (Older worker)

Financial responsibility: Because of the way the industry is organised, it was reported that financial responsibility for PPE and equipment was sometimes unclear. Often self-employed workers must provide their own tools, but the contractor provides the materials. If the appropriate materials are expensive e.g. nails and gas for nail guns, they may not always be provided.

Role of site managers

“When the physical standard has gone, look at the mental.” (Regional H&S advisor)

It was reported that site managers can play a role in easing the workload for the older worker. This may be dependent on budgetary and time restrictions for individual projects, however many participants reported that individual differences in site managers play a role in making the working environment more hospitable for the older worker. For example, site managers can make use of older workers skills e.g. as a safety scaffolder, putting them on (more skilled yet less labour intensive) corners when laying bricks etc. If older workers have aptitude they may be employed as supervisors or to train young workers.

“I’m talking about different site agents – they’re all different, temperamental. . . I don’t mind telling you. (Current site manager) treats you as a person, sometimes they’ll just treat you as a straight labourer.” (Older worker).

Tools and Equipment Design Issues

Design of construction tools and equipment should be inclusive. Designers and manufacturers reported a reluctance to design specifically for older workers, as there were no financial gains due to a lack of demand. Particularly for PPE, design and promotion of new equipment was reactive to whatever ill-health condition was prominent at the time. Some participants reported there was little market for construction tools designed to be used for older workers, but if there was a demand they would react to this. Architects could be more aware of physical limitations when designing buildings e.g. access.

Solutions

Participants reported many ways in which the working environment could be made more amenable to the older worker. Table 4 shows different types of equipment and materials that have been suggested may be particularly relevant to the older worker. Table 5 shows participants’ reported solutions other than equipment and materials that they felt would create a more hospitable working environment for the older worker. Finally, there was a perception by some of the older workers that the industry simply did not care for them.

“The construction industry is cut-throat. It’s dog-eat-dog.” (Older worker)

Table 4 Other solutions perceived to be relevant to older workers

More labourers	Reorganise the way the work is done
More direct labour	Use work rotation system to avoid repetitive exposure
Pay by day rate	Loading out gangs
Shorter working hours	Self-selection
Flexible working patterns	Provision of medical care e.g. osteopaths
Improved sick pay	Company partnering

Table 5: Equipment and materials perceived to be relevant to older workers

Low-vibration tools	Pre-mix mortar
Pre-fabricated units	Fall arrest equipment
Kerb-lifting equipment	Reduction in weights/lifting

Scissor-lifts	Power hand tools
MEWPS (mobile elevated work platforms)	Mechanical handlers
Ladder assists	PPE (personal protective equipment)
Electrical hoists	Forklifts
Access equipment	Plant operatives equipment
<i>e.g. stair access on scaffolding</i>	<i>e.g. noise reduction</i>
Facilities	Block splitters
<i>e.g. toilets and catering</i>	
Conveyor belts	Long-handle shovels
Vacuum lifters for glass	Mini-diggers

CONCLUSIONS

Construction work is arduous and physically challenging. It is well-documented that workers in the industry are at increased risk of work-related ill-health and injury. Less work has been conducted on the increased risk of occupational illness to the older construction worker; however the existing research indicates a pattern of increased ill-health with age (Arndt et al, 2005; Brenner & Ahern, 2000). The main aim of the SPARC study was to explore the perceptions of those within construction of the specific needs and abilities of older workers, and to identify ways in which the working environment could be made more hospitable for them (cf. Williams et al, 2011). Discussions with construction employees offered a valuable preliminary insight into these issues. Findings suggested that intervention can be made at all levels of the construction industry to reduce current unacceptably high levels of work-related ill-health and to reduce early retirement.

In summary, this pilot study has gained, through qualitative methodology, a broad perspective on key issues perceived by those in the industry as having implications for the working life of older workers in construction. These are thought to act at both macro and micro levels of the industry. Client demands and employment policy act alongside specific work processes, personal responsibility for safe work practice and availability of tools and equipment in creating an environment which can be hostile for the older worker as argued by Ilmarinen (2006). Further quantitative work is continuing to validate these findings, in order that effective interventions can be designed to enable older workers to take an active healthy role in the industry until retirement age, and that they may enjoy their retirement unhindered by long-term chronic health conditions caused by their work.

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