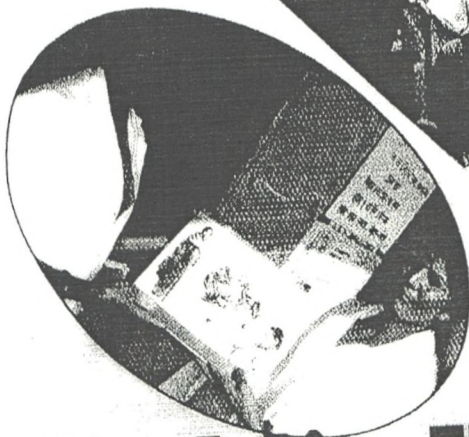
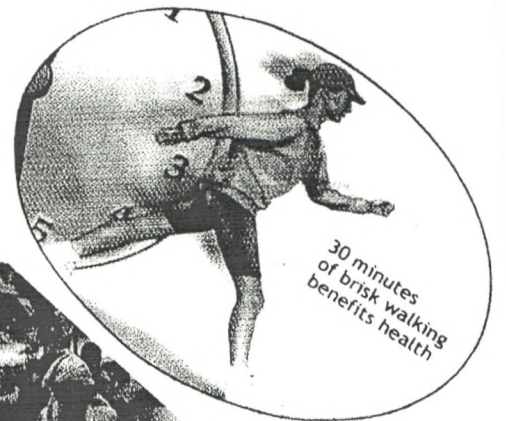


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Managing time

# health action



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# Ergonomic intervention

## A panacea for health problems among women construction labourers

\*Ms Sagufta Ahmed, \*\* Dr (Mrs) Visalakshi Rajeswari

Construction is a physically-demanding occupation, but a vital part of our nation's development. This involves a major part of unorganized labour. The large workforce handles jobs ranging from performing repetitive tasks to carrying heavy loads, placing them at risk of serious injury. Workers who must often lift, stoop, kneel, twist, grip, stretch, reach overhead, or work in other awkward positions to do a job are at risk of developing work-and-posture-related musculoskeletal disorders and orthopedic problems. These problems among women workers is all the more prominent, but invisible. These include back

(spinal) problems, carpal tunnel syndrome, tendinitis, rotator cuff tears, sprains and strains of various types. These problems do not surface but stay invisible as these women and their socio-economic status demand them to earn. To overcome these problems practical ergonomics can play an important role because the goal of the science of ergonomics is to find a "best fit" between the workers and the job conditions. Ergonomics tries to come up with solutions to make sure workers stay safe, comfortable and productive. The science looks at how physical disabilities and limitations of the human body are directly related to work task, tools, equipment and the job environment as a whole.

'Ergonomics' is defined as the science of work. It explains the interaction between workers and their work environment. By knowing about ergonomics, people can better fit tasks and tools to the individuals performing them. When people ignore ergonomics, health workers suffer. The most common result of not fitting the work environment to people are musculoskeletal disorders.

### Work-related musculoskeletal disorders

Work-related musculoskeletal disorders (WMSDs) are the leading cause of disability for people in their



working years. They can be caused by frequently working in a way that puts stress on the body such as gripping, kneeling, lifting, working in awkward positions, applying force, bending, working overhead, twisting, using vibrating equipment and over-reaching.

Musculoskeletal disorders include a group of conditions that involve the nerves, tendons, muscles and supporting structures such as intervertebral discs. They represent a wide range of disorders which can differ in severity from mild periodic symptoms to severe chronic and debilitating conditions. There are a number of well-known diagnoses of musculoskeletal disorders.

### **Carpal Tunnel Syndrome**

It is a problem of the nerve in the hand wrist, caused by repeated bending of the wrist, holding tools or materials tightly and/or constantly pressing the wrist against a hard object. Classic symptoms include numbness, tingling, burning and pain. In severe cases, there may be wasting of the muscles at the base of the thumb, dry shiny palm and clumsiness of the hand.

Female construction workers are more prone to this disease because the amount of forcefulness or muscle effort it takes to do an activity or work like sieving sand, pushing, pulling, unequal lifting or gripping a tool are examples where they require to exert force or muscle effort. The more force they exert, the greater the stress on their body. So, the position of their hands and arms in relation to their body will affect the amount of force they need to exert. If their wrists are bent downward, backward, or to one side or the other they need to use more force to do their work. The more time they spend with their wrists bent while working and exerting muscle effort, the greater the risk of developing a disease. Women are three times more likely than men to develop carpal tunnel syndrome.

### **Raynaud's syndrome or white finger disease**

It is a problem of the nerves and blood vessels in the hands, often caused by use of vibrating hand tools. Workers suffer numbness and tingling of the finger, often brought on by cold weather. Fingers turn pale white, then blue and finally red.

Female construction workers are prone to this disease because they are working even in cold climate and the materials and equipment with which they are coming in to contact like cement, sand and tools which are mostly made up of iron, are usually cold to touch.

### **Tendinitis**

Tendinitis is inflammation and soreness in tendons, caused by repeated movement of a joint. Depending on where the injury occurs, different names are assigned to the disease. Common tendinitis problems include Tenosynovitis (usually in the wrist), Trigger finger (palm side of any finger other than the thumb), De Quervain's disease (tendons in the thumb) and Epicondylitis (tennis elbow). Symptoms include a burning pain or dull aching, swelling or puffiness, snapping or jerking movements (crepitus) and ganglionic cysts (a thick mucous fluid which can form within a tendon sheath). Tendinitis is associated with work that requires repetitive motions.

Tools that are too small or too large for the hand can also put stress on the tendons.

Ergonomics tries to come up with solutions to make sure workers stay safe, comfortable and productive. The science looks at how physical disabilities and limitations of the human body are directly related to work task, tools, equipment and the job environment as a whole.

Female construction workers are prone to this disease because of repetitive motions – long periods of executing simple repetitive movements or monotonous movement, multiple (more than 1,500 to 2000 times daily) repetitions of the same movement at time interval

between repetitive cycles of less than 30 seconds like screwing drywall. Doing the same motions over and over again puts stress on muscle, tendons and joints.

### **Thoracic outlet syndrome**

It is a problem caused by reduced blood flow in the shoulders and arms caused by overhead work or carrying heavy items in the hands with the arms straight down.

Female construction workers are at risk to this disorder because they load and unload heavy items like sand, cement, tiles or bricks etc from transported intermediate storage locations to the final assembly site

as vehicles cannot go inside. Passing heavy pans of cement concrete (alternately lowering and reaching overhead at high speed) when laying RCC can be a causal factor for women suffering from this disorder.

### **Back pain**

It is caused by repeated lifting of materials, sudden movements, whole body vibration, lifting and twisting at the same time, bending over for long periods of time etc. Back problems, which seem to appear overnight, may have been building up slowly over a period of time.

Female construction workers risk back injury because of twisting, reaching, sideways bending, unequal lifting etc. Reaching upward usually causes arch to their back. This increases the forces on the lower spine, but also puts stress on the upper back, shoulders and arms.

Forward reaches that are longer than the length of their arm and require them to bend or stretch put stress on their lower back and on their legs. Bending sideways or twisting their trunk puts stress on their lower back. Carrying an object on one shoulder, arm, hand or hip puts more stress on one side of the spine.

### **Degenerative disc disease**

It is caused by damage to the gel-like cushions between the spinal vertebrae or bones. Released gel presses on the nerve. Symptoms of this disorder include numbness, pain and weakness, usually in the leg and hips, but sometimes in the arms and upper back.

Female construction workers are prone to this disease because of the trip or fall of if they are injured with heavy equipment and the posture they adopt while working.

### **Sprain and strains**

A *sprain* is an injury or tear to a ligament. Ligaments attach one vertebrae to another and help support the spine. A *strain* is an injury to muscles that have been stretched or used too much.

Female construction workers endure strains and sprains because of their forcefulness or muscle effort, awkward body posture, repetitive work, unequal lifting, pushing, pulling, tugging, twisting, reaching, sideways bending and working in a single position. Strained muscles and sprained ligaments both irritate the muscles around them. This adds to the pain and discomfort.

### **How can these problems be mitigated?**

As women construction labourers are found to do/ repeat all the activities that can abuse these referred parts of the body, an ergonomics programme can be a valuable way to reduce all the above diseases and injuries among

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them. So, ergonomic intervention programmes can be given to these women construction workers, only to generate awareness, but also to insist on practicing healthy habits and follows a changed lifestyle.

### **Intervention programme**

There are several models for carrying out risk assessment and solution. These methods use the trilogy of work – worker – work environment as a part of risk assessment. Here is one step-by-step approach, which has been adopted in this study.

#### **Worker and work**

- Look for the hazards
- Decide who may be harmed and how
- Evaluate the risks and decide on action
- Disseminate information: As a part of prevention, it is important to ensure that all workers receive appropriate information and training. Information has to be provided on the measures which are introduced to improve health and safety in the workplace because several studies have shown that female construction workers suffer from gender and sexual harassment, a factor associated with low job satisfaction as well as psychological and physiological health symptoms and workplace injuries.
- Offer training: Workers can be trained to increase their awareness of ergonomic factors, and to recognize and avoid unsafe working conditions. Furthermore, workers can be made, to understand why it is important to pay attention to prevention, and what might happen if this is neglected. They can be made aware of the benefits of adopting good practices and work methods.
- Provide protective gear: Personal protective equipment is needed to protect workers from risks.

For example: mechanical handling aids are used to remove or reduce the need to handle materials. So, particular hand protection is required for some tasks.

### Work environment

Work management can be given like better planning of the work or implementing safe system of work. Tasks can be reallocated between workers to reduce repeated motions, forceful hand exertion, and prolonged bending and twisting.

At the organizational level, practical solutions should include establishing appropriate work/rest ratios to reduce the build up of fatigue, organizing breaks, and providing job rotation. At the corporate level, a safety culture should be promoted, with stakeholder involvement in identifying and controlling work-related neck and upper limb disorders, risk factors and improving safety and surveillance measures.

As the construction labour force becomes more diversified, the construction industry as a whole cannot afford to overlook the genuine safety and health needs and concerns of female construction workers,

apprentices, and job applicants. The document is intended to call attention to the real contemporary health and safety issues of women in construction. These issues merit attention, and action by all those who share responsibility in the arena of construction safety and health. Sometimes, a small change in tools, equipment or materials can make a big difference in preventing injuries.

National Institute of Occupational Safety and Health (NIOSH) believes that better work practices and tools can reduce the frequency and seriousness of sprains and strains among construction workers. When ergonomic changes are introduced into the workplace or job site, they should always be accompanied by worker training on how to work safely. Therefore, an ergonomics intervention programme can be a valuable way to reduce injuries, improve worker morale which in turn will increase the productivity. ■

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and the facilitator among themselves. On meeting day, the CHVs assemble around 12-20 women from the community either at any of the WIN clinics or at an open place within the community. The topic to be discussed is also mentioned to the community women at that time.

The NFE sessions usually open with a song or through introduction of themselves. The facilitator then gives information about the session planned and receives any feedback from the participants. The CHVs use handouts/posters/charts of various topics to impart the education to the assembled women. After the discussion the CHVs emphasise the main messages and ask the

participants to repeat them; this ensures reinforcement of the messages. The meeting ends by thanking the women participants after which the names of the women attendees are taken.

During some of these NFE sessions, there were instances where the women having gained information had gone ahead with gynecological check-ups. In other instances, many women have accepted family-planning methods of receiving knowledge through these NFE sessions. The NFE sessions also enable the newly migrated women from rural areas to the urban slums with important information about urban life and related social issues, such as nearest health center etc.

We at CSSC firmly believe that public health education gained by health workers need to be translated and transferred in a strategic manner to the communities. The NFE programme of the WIN project is one such way of extending this education. This can be looked at as an attempt to partner the national strategy as part of the NRHM and proposed national urban health mission (NUHM) for the ASHA /USHA cadres to extend an integrated format of health education to the community women. ■

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**During the year 2008-09, 317 NFE sessions were taken with an average attendance of 14 women per session in the following topics:**

Topic	Number of sessions
Reproductive and Child Health, and Family Planning	62
Child Health	60
General Health	113
Social Issues	82
<b>Total</b>	<b>317</b>