Assessment of Ergonomic Risk Factor and Functional Status among Bank Workers of Loni

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Abstract: Bankers are responsible for working for 8 hours daily maintaining static posture and for longer time, using computer, handling mouse, working over the counter, typing on keyboard causing overuse of upper extremity and neck and thus causing micro trauma to the structures leading to pain. In this cross sectional study 46 participants agreed to participate in the study. Ergonomic risk assessment was done using Rapid Upper Limb Assessment and functional status of the 30 bankers suffering through neck pain was assessed using Neck Disability Index. All the participants screened using RULA showed moderate risk for both right and left upper limb. Functional status of the participants found to be 8.54±3.277 showing mild disability. Awareness regarding musculoskeletal injuries is also necessary for their avoidance.

1. Introduction

In a year, approximately 10 lac people take time away from work because of repetitive motion or overexertion to recover from musculoskeletal pain or functional loss [1]. Occupational disease covers pathological conditions induced by prolonged work, exertion harmful factors inherent in materials, equipments or working environment. There are diseases which are caused by etiological factors inherent in circumstances in which workers work. Bad posture, repeated physical effort or psychological stresses are contributing factor for occupational diseases [1]. Long work hours and strenuous activities put workers at risk for work-related musculo-skeletal disorders (WMSDs), predominantly low back pain (LBP). WMSDs are a major health problem among workers in both industrially developed and developing countries [2] Musculoskeletal disorders (MSDs) are currently one of the most crucial problems faced by the ergonomists in the workplace. In industrially developing countries, the problems related to workplace injuries are extremely serious. Poor working conditions and the absence of an effective work injury prevention program in industrially developing countries have resulted in a very incidence of MSDs [3]. Musculoskeletal disorders are the most common self-reported work related illness. They are manifestation of ergonomic hazards and are the leading cause of disability of people during the working years. Work related musculoskeletal disorders are responsible for lost earnings, workers compensation payments and medical payments, and are costly than any other single health disorder [4]. Musculoskeletal disorders are prevalent and their impact is pervasive. They are the most common cause of severe long term pain and physical disability, and they affect hundreds of millions of people around the world. They significantly affect the psychosocial status of affected people as well as their families and carers [5]. Neck pain is one of the most common musculoskeletal complaints related to work [6]. The prevalence increases with longer prevalence periods and generally women (18%) have more neck pain than men (11%) [7,8]. While neck pain is generally believed to be of multifactorial origin, it remains unclear which factors place office workers, in particular, at higher risk. Postulated factors in this occupational group include: individual factors (e.g. gender), work environment factors (e.g. repetitive work, exposure level) psychosocial factors (e.g. stress, high job demands, low decision latitude) and perceived muscular tension [9]. Other Risk factors include repetitive work, prolonged periods of cervical spine in flexion, high psychological job strain, smoking and previous neck/shoulder injury [10]. In the banking sector, bankers’ work involve the use of computer for data collection, processing and programming; hence the risk of developing musculoskeletal disorders inherent in computing industries [11]. Bank Managers are responsible for planning and defining targets for local branches; monitoring achievements; making decisions and attending special clients. These tasks are carried out using personal computers and telephone, in daily 8 to 10 hour shifts. The managers’ work involved sitting job for most of the time. Cashiers' tasks include dealing with deposits and withdrawals, receiving a wide range of payments and selling branch products for clients. These tasks are performed with the worker sitting through their 8 hour shifts involving intensive use of personal computers for typing data and the stamping of many documents (using heavy wooden stamps). The tasks performed by the clerks vary according to the branches' sectors to which they were
allocated. They are included in liaising with personal and business clients in person and by telephone, a range of administrative activities such as preparing and monitoring contracts for loans and concessions, and checking and typing information. Their job involves nearly continuous use of personal computers and telephones often simultaneously, although their daily routine varies according to the clients' demands. Compared to the cashiers their computer use is less extensive [12].

The intensive computer work requires repetitive movements of the upper limbs, such as typing with the keyboard and handling the mouse, but also static muscle activity while keeping the arms and neck in a stable position. The computer work also overloads the neck, shoulder, and upper limb muscles and joints to maintain it into static position. Muscles and joints become stressed as their support structures are weakened. As the tissues are overloaded continuously, risk of ischemic cumulative injuries is increased [13]. Thus this study aims to investigate risk assessment from results of Rapid Upper Limb Assessment (RULA) as and to assess the functional status of bank workers suffering through neck pain in rural area as it is cost effective and will be helpful for workers to prevent disability at earliest. Through appropriate intervention further problem can be reduced.

2. Method

This cross sectional study was conducted in order to investigate risk assessment from the results of RULA and to assess the functional status of bank workers suffering through neck pain. Ethical approval was received from the Institutional Ethical Committee (Ref. no. PIMS/CPT/IEC/2016/16558). Study was conducted in rural area. Prvara Sahakari Bank Ltd. and Central Bank of India, Loni branch. Permission to conduct the study was received from respective branches. Inclusion criteria of the study comprised of males and females of age between 19 to 50 years with neck pain and working on computer for minimum 4 to 6 hours. Exclusion criteria was staff of the bank that are not bankers such as messenger, cleaners, peons, janitors and security men, participants having systemic illness and participants who have participated in neck exercise programme in past 6 months. Total sample size was 55 from which 5 participants were excluded for not fulfilling exclusion criteria. 4 participants refused to participate in the study. Total 46 samples were included in the study. All the participants were screened using RULA. Out of 46 participants 30 participants’ Functional status was assessed using Neck Disability Index (NDI).

RULA was developed to evaluate the exposure of individual workers to ergonomic risk factors associated with upper extremity MSD. The RULA ergonomic assessment tool considers biomechanical and postural load requirements of job tasks/demands on the neck, trunk and upper extremities [14].

3. Result

In this study total 46 bankers of Pravara Sahakari Bank Ltd. and Central Bank of India, Loni Branch agreed to participate in the study. Mean age of the participants included in the study was 37.68±6.58 years. Mean time spent at work was 8.72±1.03 hours. Results observed from the RULA indicate that tasks performed by the participants were in medium risk of musculoskeletal injury for both right side and left side. Risk was greater in managers requiring bending and twisting lower back to answer phone.

Figure 1. Mean Rula score

Neck Disability Index (NDI) was used to assess the functional status of the participants suffering from neck pain. Mean of NDI scores was found to be 8.54±3.277.

4. Discussion

Musculoskeletal disorders (MSDs) are a common health problem and a major cause of disability throughout the world. The economic loss due to such disorders affects not only the individual level but also the organization level and the society as a whole [15]. A study done amongst Kuwaiti bank workers reported that the most affected body parts were the neck (53.5%), lower back(51.1%) shoulders(49.2%) and upper back(38.4%) [16] suggesting the neck pain was most prevalent among bank workers.

Another study among office employees working with computer showed that non specific neck pain was found to be 47% and it was associated with work related and individual variables [17]. Study performed to assess the prevalence of neck pain among bank workers of Dhaka showed that
prevalence of neck pain was 45.7%. Prevalence of neck pain was higher among female bank workers than male bank workers [18].

Prevalence of complaints in various body parts were found to be neck-31.4%, back-30.6%, shoulder-16.5%, hand and wrist-14.9% and arm-6.6% in workers from Hong Kong bank [19]. Prevalence and patterns of work related musculoskeletal disorders among bankers in Northeast Nigeria prevalence of complaints in various body parts were: neck-31.4%, back-30.6%, shoulder-16.5%, hand and wrist-14.9% and arm-6.6% [11].

The purpose of the study was to assess the ergonomic risk for working postures in banking sector. In the current study, the results of ergonomic risk assessment showed that all the tasks performed by the bankers were of medium risk requiring further investigation and implementation of change soon. These tasks required continuous bending, twisting of back, as repetition of terminal movements of neck back and upper limb as well as lifting heavy weights on back repeatedly.

Also the functional status of the workers suffering through neck pain showed mild disability amongst participants.

Factors responsible for disability as well as risk factors includes use of keyboard, handling mouse for most of the time of work, using computer screen, maintaining static posture for longer time and infrequent breaks. Neglecting these factors may pose serious issues for bankers and may increase the cost associated with work related musculoskeletal disorders.

5. Conclusion

From this study we conclude that the tasks performed by the bankers posses moderate risk of occurrence of musculoskeletal injury requiring further investigation and ergonomic intervention as soon as possible. In rural areas this issue is neglected due to lack of resources. An informative lecture about ergonomics and managing workspace would be of help.

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7. References


