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Exploring the scope of participatory ergonomics in the health care industry

Saurabh Rambiharilal Shrivastava, Prateek Saurabh Shrivastava, Jegadeesh Ramasamy

Department of
Community Medicine,
Shri Sathya Sai Medical
College & Research
Institute, Kancheepuram,
Tamil Nadu, India

Address for correspondence:
Dr. Saurabh Rambiharilal
Shrivastava, 3rd Floor,
Department of Community
Medicine, Shri Sathya Sai
Medical College & Research
Institute, Ammapettai village,
Thiruporur - Guduvancherry
Main Road, Sembakkam Post,
Kancheepuram - 603 108,
Tamil Nadu, India.
Phone: +91-9884227224,
E-mail: drshrishri2008@
gmail.com

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ABSTRACT

Ergonomics is the “science of work” that includes different strategies to ensure fitting the equipment and the workplace environment to the needs of the worker. Ergonomics considers worker’s capabilities and limitations so that their safety, comfort, job satisfaction, and efficiency can be enhanced. In the last decade or so, other than the industrial sector, the principles of ergonomics have been employed in different dimensions of the health care sector. The ergonomists have advocated paying due interest to the needs of all the stakeholders and even agreed for the formulation of a multifaceted and comprehensive approach in the health sector to minimize the burden of the occupational hazards. In conclusion, as proved in the industrial sector, ergonomics has a definite potential to improve the health-related aspects of both the health professionals and the patients in the modern era.

KEY WORDS: Ergonomics, healthcare industry, workplace

INTRODUCTION

Ergonomics is the “science of work” that includes different strategies to ensure fitting the equipment and the workplace environment to the needs of the worker [1]. Ergonomics considers worker’s capabilities and limitations so that their safety, comfort, job satisfaction, and efficiency can be enhanced [2,3]. Simultaneously, it brings about a massive reduction in the compensation cost and rate of employee turnover [2,3]. Thus, ergonomists have a duty to regulate both the working method and the environment to reduce the health hazards induced by job duty and thus they should have not only the technical knowledge of medicine, but also a fundamental knowledge of the specific industry [2]. To assess the extent of fit between a worker and their job, three attributes are explored, namely the job and the demands on the worker; the device used; and the manner in which information is used [2,4]. The health care industry comprises of a wide range of health professionals like doctors, nurses, midwives, laboratory technicians, specialists from traditional and complementary medicine, pharmacists, etc., each of them being exposed to different occupational hazard depending upon the nature of work in which they are engaged [5].

IMPORTANCE OF ERGONOMICS IN HEALTH SECTOR

The WHO health statistics report-2014 suggest that on a global scale the density of physicians, nursing and midwifery personnel, dentistry personnel, and pharmaceutical personnel were 14.1, 29.2, 2.7, and 4.3 health professionals for every 10,000 population [6]. Due to the wide scarcity of health care professionals, especially in low resource settings and in developing countries, any occupational health hazard further reduces the workforce and indirectly hampers both the quality and the delivery of services to the masses. Furthermore, a very few proportion of health workers seeks advice for the occupation-induced health hazard and thus it aggravates the problem of sickness absenteeism and is a significant hurdle in the path of development of a country [1,2,7].

HEALTH HAZARDS ATTRIBUTED TO ABSENCES OF ERGONOMICS

Globally, ergonomics aims to decrease work stressors (*viz.* excessive repetition, static postures, cold temperature, vibrations, poor work-station design, etc.) in order to avoid musculoskeletal disorders (like tendonitis, trigger finger, carpal

tunnel syndrome, etc.); physical/chemical/biological hazards; psychosocial ailments; sickness absenteeism; and occupational cancers [1-4]. For instance, it has been estimated that every year one in six employers will be affected by poor application of principles of ergonomics, and at the same time millions of computer users will be affected with vision defects and musculoskeletal disorders every year [8,9]. Findings of a study done among dentists revealed that almost 29.5% of the dentists have to opt for an early retirement because of the musculoskeletal disorders (*viz.* lower and upper back pain, hand/wrist problems, etc.) [10,11]. In fact, in another study almost 74% of the participants reported musculoskeletal pain, with the most common painful sites being neck and back [12]. In a multi-centric study conducted among radiologists to assess the prevalence of musculoskeletal symptoms, almost 38% of the study participants reported radiology-associated occupational injury [7]. In addition, findings of studies have suggested that poor posture may contribute in structural deformity of the body, decreased lung capacity, poor circulation, and reduced intravascular pressure [13-15]. Furthermore, healthcare workers from home settings are often exposed to overexertion, stress, blood-borne pathogens, needle-stick injuries, latex sensitivity, temperature extremes, etc., [16]. In short, ergonomics aims to appropriately modify the task method and the condition to ensure optimal productive activity with maximum efficiency and sustainability [2].

APPLICATION OF PARTICIPATORY ERGONOMICS IN THE HEALTH ARENA

In the last decade or so, other than the industrial sector, the principles of ergonomics have been employed in different dimensions of the health care sector like preparation of the design of physical environment/health care system [17]; workload management amidst inadequate staff [18]; deployment of interactive medical devices like infusion pumps that has minimal risk of unintended harm if used in clinical practice [19]; reduction in job-related stress [20]; patient safety [21,22]; and in marketing of safe medical products [23]. It has been even shown that employment of principles of ergonomics allowed identification of multiple potential gaps, pertaining to the hand hygiene, isolation of infectious patient, monitoring of vital parameters, adequate and appropriate delivery of medications and handover of information [23]. Furthermore, participatory ergonomic model has been proposed to achieve successful workplace health promotion as job stress cannot be neutralized without an active involvement of employees in terms of hazard identification [20]. At the same time, it allows interaction of multiple levels within an organization and thus allows a more comprehensive redesign of the organization by taking into account physical and mental resources of workers [20,24]. In-fact, it has been proved that the participatory ergonomic model allowed enhanced worker perceptions about workplace communication dynamics, and even reduced psychosocial exposures [25]. In addition, the principles of ergonomics have been employed to assess user needs at the time of design of medical equipments; to bring about a reduction in lower back muscular discomfort; and management of neck and upper

extremity musculoskeletal disorders [26-29]. Research finding of the study revealed that a significant improvement in the quality of the work of the microscope workers was observed following their participation in ergonomically oriented training [30].

STRATEGIES TO ENSURE EXPANSION OF ERGONOMICS

The ergonomists have advocated paying due interest to the needs of all the stakeholders in the health sector to minimize the burden of the occupational hazards [19]. In fact, finding of a qualitative study done within the hospital premises concluded that in order to develop a sound ergonomics program there is an immense need for a multifaceted and comprehensive approach within the health care establishments [18]. Extension of the management support is a critical event to ensure the overall success of the ergonomic process [31]. In addition, interventions in the form of involvement of workers (*viz.* participatory ergonomic approach-where workers are directly involved in worksite assessments, solution development and implementation); orientation of the workers regarding ergonomics and its importance; mechanism to facilitate early identification/reporting of health ailments; designing tasks, workspaces, tools, lighting, and equipment to match the health workers physical capabilities and limitations; timely implementation of the solutions to control hazards; and timely evaluation and hence that effectiveness of the corrective actions can be assessed; should also be explored to have long-term healthy impact on health status of the professionals [31-34]. Furthermore, strategies like motivating employers to implement ergonomically approved preventive measures; creating awareness among the hospital staff about the occupation hazards and significance of personal protective equipments; implementing appropriate measures to maintain sanitation; developing standardized protocol for conducting medical examination of the health care workers to allow early recognition of signs and symptoms of occupation-induced illnesses; and adopting suitable engineering measures to facilitate mechanization; have been proposed [1,2,18,21,22,35].

CONCLUSION

In conclusion, as proved in the industrial sector, ergonomics has a definite potential to improve the health-related aspects of both the health professionals and the patients in the modern era.

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