

## Guest Editorial

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# Sri Lanka: Adding Ergonomics Dimension in the Health Agenda

## 1. Country background

Sri Lanka is an island in the Indian subcontinent with approximately 21 million people [1]. The country has been recently identified as a Lower Middle Income Country (LMIC) based on World Bank ratings with a gross national income (GNI) per capita of 3800 USD in 2015 [1, 2]. With an excellent human development index, Sri Lanka boasts of excellent health indicators on par with high income countries [1, 3]. Impressive achievements in health at low cost have been credited to the policies of successive governments in providing free health and free education for all for more than five decades. The government continues to provide health and education services without user fee maintaining an equitable and quality health care service in both curative and preventive arms. High levels of general and health literacy rates have contributed immensely to emerge Sri Lanka as a role model in the South Asian region.

## 2. Population dynamics, economic development and health achievements

The population structure changed over the years showing a steadily growing bulge in adolescent and middle age people. The proportion of working and productive population is ever increasing [4]. The labor force in the country is estimated to be 8.9 million (Manual, Office-based, Factory, Agriculture etc) [1, 4]. The labor productivity, measured as the GDP per worker, increased steadily over the last few years recording an average increase of around 6 per cent per year. The increase in productivity in the agriculture sector was the main contributor to productivity [4]. A population 3.8 million school children are in a presumed healthy and safe environment. However, latest research indicates gross deficiencies in classroom environments [5, 6]. The 3.7 million adolescent population show unhealthy behaviors, use high rate

of technology (mobile phones, computer-based and digitalized appliances) and are more prone to negative ergonomic consequences.

There is also a phenomenal economy growth reflected in GDP at current market prices and per capita GDP [1]. The economic goal of the country is “Enhancement in productivity in all sectors of the economy is essential in order to remain competitive, penetrate new markets and attract more investors for sustainable economic growth” [1]. Ergonomics plays a key role in achieving productivity in labor force.

Sri Lanka reports a low maternal, infant and neonatal mortality and a higher level of life expectancy [1, 3, 7]. The mortality and morbidity causality profile changes spectacularly to that of a high income country [3]. In such a context, present epidemiological and demographic transition impose an enormous challenge on the existing health system necessitating further transformation to curtail the impending non communicable disease(NCD) epidemic [8].

At present, Sri Lanka’s main development challenges, include accelerating growth through increased investment, achieve more equitable development through assistance to the lagging regions, and strengthen public services delivery to ensure quality and performance of services to meet development needs. In achieving economic goals with a healthy and productive population, addressing issues and challenges in an ergonomic perspective is eminent.

## 3. Emerging need for human factors and ergonomics

With the advancement of technology in the country, ergonomics has also penetrated enormously in to several fields. The practitioners of ergonomics should contribute to the planning, design, implementation, evaluation, redesign and continuous improvement of tasks, jobs, products, technologies, processes, organizations, environments and systems in order to make

them compatible with the needs, abilities and limitations of people [9]. Mismatched ergonomics result in a multitude of negative health consequences and may have implications on economic development of a country. Feasible solutions are available to mitigate such negative effects. In a context of rapid technology transfer, promotion of ergonomics both at macro and micro levels will undoubtedly contribute to economic and human development of a nation. Though ergonomics is still a novel science for Sri Lanka, there are several fragmented approaches launched focusing on key areas of ergonomics, e.g. Occupational Safety & Health (OSH), ergonomics for children, healthy schoolbag campaign and healthcare facility ergonomics.

The main drawback in inculcating ergonomics in the Sri Lanka's contexts is the lacunae in knowledge. Although, there had been numerous research conducted covering manifold fields of ergonomics, collation and dissemination of such work at academic level seem to be limited. If such evidence is available, it would be valuable in formulating preventive strategies to mollify the negative consequences of ergonomic incompatibilities.

#### 4. Health sector involvement in ergonomics

Sri Lanka Medical Association (SLMA) is the premier professional organization representing the medical community of all branches of medicine. SLMA has taken a prominent role in promoting ergonomics in Sri Lanka. The Expert Committee on Ergonomics of Sri Lanka Medical Association (SLMA-ECE) was established in 2013, with the objective of promoting ergonomics to medical community, general public and in healthcare settings. SLMA-ECE initiated a series of activities focusing on ergonomics in the country. Introducing the concept of "ergonomics", SLMA-ECE conducted a number of knowledge transfer workshops including a national symposium on ergonomics, "Inculcating Ergonomics in the Sri Lankan Setting", with the participation of key resource persons from the International Ergonomics Association and local ergonomists. Other activities focused on healthy school environments, ergonomic schoolbags, childhood injury prevention and occupational safety and health (OSH).

With the objective of inspiring local scholars for more research work related to ergonomics as well as to disseminate existing research evidence on ergonomics in Sri Lanka, SLMA-ECE in collabora-

tion with the editors of "Work" Journal, organized this special section on Work and Ergonomics in Sri Lanka.

#### 5. Brief description of the included articles

This special issue attracted many professionals from different sectors to share and transfer the new knowledge on ergonomics and human factors. Following the call for manuscripts, we have selected eight recent work carried out in Sri Lanka by the eminent scientists in the field of ergonomics and related fields.

*The demands and benefits of ergonomics in Sri Lankan apparel industry: A case study at MAS Holdings*, attempts to briefly discuss the need and the paybacks of ergonomics in the apparel industry which brings foreign exchange to Sri Lanka. Authors try to evaluate qualitatively the way ergonomics assists in manufacturing sectors in the country. Suraweera and colleagues analyse the under reported burden of occupational health issues in small scale industries in Sri Lanka focusing on disease burden on work-related musculoskeletal pain. Research on *Ergonomics for Enhancing Detection of Machine Abnormalities* by Illankoon et al. touches on ergonomic issues involved in detecting machine abnormalities and suggests how ergonomics would improve such detection.

With the impending threat on NCD epidemic in the country, Chandrasiri, Dissanayake and Silva have conducted a timely study on health promotion in workplaces as a strategy for modification of risk factors of NCDs, a practical example from Sri Lanka. The study attempts to transform a workplace to a health promotion setting where lifestyle changes in workers lead to a modification of risk factors for NCDs. This special issue also includes a review of evidence on ergonomic footwear for Sri Lankan primary schoolchildren aiming to reiterate the need for ergonomically-designed footwear. The article identifies the requirements in terms of design information, with the objective of empowering footwear manufacturers. Amarasinghe and Seneviratne have published their original work on development of a tool to assess the work related neck and upper limb musculoskeletal disorders among female garment workers in Sri Lanka in order to fill the gap of non-availability of a valid and reliable tool. In a totally different perspective, Gunathunga introduces strategies for improving performance and happiness among healthcare workers through a body-mind approach in a health care setting in Sri Lanka.

Addressing the need for inculcating ergonomics in the country setting, this section on Work and Ergonomics in Sri Lanka will be the first-ever health-led knowledge synthesis in the evolving discipline of ergonomics in the country.

## 6. The way forward

A health-led concerted effort is essential considering the significance and applicability of ergonomics to healthcare professionals in Sri Lankan contexts. Sri Lanka Medical Association, being the premier professional organization representing the medical community, takes the lead role in promoting ergonomics in Sri Lanka. Local experts working in isolation on different ergonomic scenarios have been given the opportunity to publicize their work and experience in this edition. The SLMA-ECE, being a newly established professional group, could showcase its capacity in transfer of knowledge and contributed to the national efforts in making a healthier nation. With the generation of scientific evidence and dissemination of the findings to key stakeholders, the outcome utilization efforts will be catalysed by the demands for solutions. This edition will be an eye-opener and an effective platform to move forward with feasible ergonomic strategies with multi-sector involvement both at local and global levels.

*Guest Editors*

*Kapila Jayaratne*

Consultant Community Physician, Chairperson,  
Expert Committee on Ergonomics  
Sri Lanka Medical Association  
National Program Manager, Maternal & Child  
Morbidity & Mortality Surveillance  
Ministry of Health, Sri Lanka  
E-mail: kapjay613@gmail.com.

*Manjula Danansuriya*

Consultant Community Physician,  
National Program Manager,  
Adolescent Health, Ministry of Health  
Member, Expert Committee on Ergonomics,  
Sri Lanka Medical Association

*Chamaine De Silva*

Medical Officer, Bioinformatics Convenor,  
Expert Committee on Ergonomics,  
Sri Lanka Medical Association

## References

- [1] Central Bank of Sri Lanka. Annual Report 2015. Colombo: Central Bank of Sri Lanka; 2015 Available from: [http://www.cbsl.gov.lk/pics\\_n\\_docs/10\\_pub/\\_docs/efr/annual\\_report/AR\\_2015/](http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/efr/annual_report/AR_2015/)
- [2] World Bank. World Data Bank- World Development Indicators. World Bank; 2015. Available from: <http://databank.worldbank.org/data/reports.aspx?source=2&country=LKA>
- [3] Annual Report on Family Health -2013. Colombo: Family Health Bureau, Ministry of Health; 2014 June. 88p: Available from: <http://fhh.health.gov.lk/>
- [4] Sri Lanka Labour Force Survey Annual Report - 2014. Colombo: Department of Census and Statistics, Ministry of Policy Planning Economic Affairs; 2015 September. pp. 79. Available from: <http://www.statistics.gov.lk/>
- [5] Jayaratne K. Inculcating the ergonomic culture in developing countries: National healthy schoolbag initiative in Sri Lanka. *Human Factors* 2013;54(6):908-24.
- [6] Jayaratne ILK, Fernando DN. Ergonomics related to seating arrangements in the classroom: Worst in South East Asia? The situation in Sri Lankan school children. *WORK* 2009;34(4):409-20.
- [7] Annual Health Bulletin-2014. Colombo: Ministry of Health Sri Lanka; 2014.
- [8] The National Policy and Strategic Framework for Prevention and Control of Chronic Non-Communicable Diseases. Colombo: Ministry of Health Sri Lanka; 2009.
- [9] International Ergonomics Association. Definition and Domains of Ergonomics. 2016 [cited 2016, 17.08.2016]; Available from: <http://www.iea.cc/whats/>