



How Ergonomics Practices Effects on Hotel Housekeeping Employees in Star Hotels –A Review Study

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Abstract- The purpose of this paper is to overview the ergonomics risk factors in hotel industry. The objective is to give a basic introduction and clear definition of ergonomic. The study will include the ergonomics risk factors in relation of human and their nature of work. Based on the literature, the most significant ergonomics risk factors are awkward posture in handling job task, force and repetition of specific movement including vibration. Other ergonomics risk factor includes uncomfortable static position, contact stress of muscles and tendon and also extreme temperature condition. This study will enhance the awareness of the risk factors which may occur in the hotel industry.

Key Word- Ergonomics, Hotel Industry, Health and safety

I. INTRODUCTION -

Ergonomics is defined as the study of the design of a workplace, equipment, machine, tool, product, environment, and system which takes into consideration human being's physical, physiological, capabilities and optimizes the effectiveness and productivity of work systems while assuring the safety, health, and wellbeing of the workers (Fernandez, 1995). **Housekeeping is a physically demanding job.** Housekeepers clean and sanitize spaces for the comfort and convenience of guest. There are risks associated with hotel housekeeping that typically go unnoticed. The housekeeping staff performs tasks that can include dusting, vacuuming, pulling bed linens, making beds, cleaning bathrooms and other areas , squeezing spray bottles, and disposing of trash.

Definitions of Ergonomics Practices

1	A good ergonomic design not only maximizes the capabilities of workers by increasing productivity and job satisfaction, but also benefits the employer by decreasing the cost for health and absenteeism. In other words, ergonomics enables "fitting the task to the worker"	Khan et al. 2012
2	Ergonomics is concerned with well-being. The second of the two objects of the royal charter of the Chartered Institute of Ergonomics and Human Factors (CIEHF) refers to the promotion of well-being through the use of ergonomics knowledge (CIEHF 2014).	Richardson et al.2017
3	In addition to the poor physical workplace and equipment design, administrative problems , such as inadequate breaks and lack of job control by workers, as observed by Ahasan and Rabiul (2002) , have most likely contributed to the physical ailments mentioned	Ahasan et al.2002

4	Health, safety and ergonomics deal with interactions between humans and other elements of a system in carrying out a purposeful activity (Kawakami et al. 1999). OHS/ ergonomics also concerned with human-system interaction and design considerations that include physical, cognitive, social, organizational and environmental factors aiming to improve workers' well-being and overall system performance by optimizing human system compatibility	Kawakami et al. 1999
5	ergonomics applications are the basic needs for an individual worker's mental, physical, and social development,	Kawakami et al. 1999
6	Ergonomic problems at the workplace and bad work organization are part of the contributing risk factors to the occupational safety and health problems ,Applying ergonomic principles, however, is beneficial not only to the workers. The benefits to employers are equally significant. Healthy employees can be nearly three times more productive than those in poor health. These benefits to the workers and employers are both visible and measurable. The costs of ignoring these basic principles might include employee turnover, poor quality etc.	Shengli Niu,2010
7	Ergonomics is often viewed in a simplified way as it focuses mainly on the physical aspects of work: force, repetition rate and posture	Brian Pearce, 2003
8	Psychosocial factors are often misunderstood and ignored. Perceived changes in leadership, social climate, organizational commitment, and job strain have significant effects on changes in workers' health. Addressing these factors at workplace will improve workers' health and affect organizational outcomes in the long run	Lohela et al.,2009
9	Ergonomics, a term that first surfaced in the 1940s, is the science of adapting work and working conditions to the physical needs of the workers rather than requiring the inadequately designed working environment. Ergonomics is a worker to adapt to the essential and integral part of occupational health practice.	According to the International Ergonomics Association (IEA)

II. REVIEW OF LITERATURE –

The review means organizing the knowledge of specific area or particular subject of research to widen the horizon of research in this field. In broad sense literature review can help in following ways to researcher:

- Amissah (2014), it was found out that high labor turnover among hotel staff in the Eastern Region of Ghana in relation to other similar studies indicate that unfavorable working conditions are a major factor leading to high labor turnover among hotels in Ghana.
- Miller, 1995, Work related MSDs, low back pain and other health problems result in increased absenteeism and lost working time, adverse effects on labor relations, higher insurance and compensation costs, increased probability of accidents and errors, job transfer and higher turnover of workers, more scrap and decreased production, low-quality work and high administrative and personnel costs
- Leong, Furnham and Cooper (1996) expressed that stretch coming about from work is a major issue, both for people inside an association and for associations themselves. Faulkner and Patiar (1997) in their study found that the GRAs are exposed to overwhelming lifting, pushing carts, moving furniture, and dreary bowing. They encourage famous the presentation to dangerous cleaning items. The workers who taken part in the study depicted their work as difficult, tiring, moo paid, tedious, overwhelming, point by point, fastidious, not curiously, forlorn, servile, including managing with ungainly visitors, and messy work.

- Munz& Kohler, (1997) in their study confirmed that it is critical to create working environment hones that advance positive Health results and remediate negative push and Health results; it is too imperative that organizations center on the needs of workers in creating such programs.
- Buchanan et al., 2010Gender and employer play an important role in exploring the social environment, ergonomics and safety hazards at workplaces
- Kumar and Singh's (2015) study supports the assertion that most small hotels are facing challenges in controlling hazards at the managerial level. The study found that human issues takes the centre stage with issues such as poor employee training, poor enforcement of standards, employee skills mismatch being the major concerns.
- Hsu, Ho, Tsai & Wang, 2011Housekeepers are responsible for cleaning rooms and public areas of the hotel. Hotel housekeepers must fulfill guests' requirements and provide 24 hours and seven days a week services, which means that housekeepers need to work within a three-shift system in the department
- According to ILO (2015),lack of knowledge and awareness on safety at work, inadequate health and safety polices are major contributing factors to the occurrence of occupational related accidents, infections and diseases yet these are factors that can easily be addressed

Serial No.	Paper Title	Journal	Key Words	Research Methodology	Findings
01	Assessment of the Role of Strategic Ergonomics on Employee Performance in the Health Sector in Kenya: A Study of Health Workers in Nakuru County(Evelyn Wanjiru Kahare,2014)	International Journal of Science and Research (IJSR)	Ergonomics, Workplace, Health workers, Strategic management, Performance	The study used descriptive analysis techniques to analyze the data. Descriptive statistics were computed using Frequencies and standard deviation. Chi-squares were used to analyze relationship between ergonomics in private and public hospitals	The study concluded that physical, behavioral, management support and management awareness on ergonomics as critical components of performance. Behavioral and management support on implementation of ergonomics in the Workplace having strongest influence.
2	Effects of Ergonomic Management Software on Employee Performance	Report, Department of Design and Environmental Analysis Cornell University Ithaca, NY 14853-4401	Ergonomics , musculoskeletal symptoms, Return on Investment Analysis, Postural Discomfort	The research was designed as a pre-treatment/post-treatment case/control study.	This field study investigated the effects of using an ergonomic workflow software system in a real-world office

					setting over a five-weeks period.
3	Economic Effectiveness of Ergonomics Interventions,(Hassan Sadeghi Naeini*, Koustuv Dalal, Seyed Hashem Mosaddad & Karmegam Karuppiah,2018)	International Journal of Industrial Engineering & Production Research	Ergonomics; Economics; occupational health; Product design.	344 peer-reviewed articles were identified (7 in PubMed, 307 in EBSCO, and 30 in Web of Science	This study showed that participants considered HWC as a factor, and some of them stated that healthy condition at industry encouraged them to buy goods, even to pay 17.5% more than normal price
4	Machines and People” - The evolution of industrial ergonomics in the mid-twentieth century.(2017. Roland John Edwards)	University of Manchester	Committee on Research into Productivity, Ergonomics Research, Human Sciences, Human Relations	Descriptive method using questionnaire	ergonomics is an enabling science which supported both engineering and Operations research .
5	Ergonomics improvement in the supply chain,(Jessica Rasmussen , Diana Alvarez)	International Journal of Industrial Ergonomics	A correlation between discomfort and the variable “period of time in similar tasks”	study is divided in four stages: the understanding and knowledge of the transportation process, the application of questionnaires , the application of observation techniques and the formulation of solution Alternatives.	It was observed that in the Wholesalers channel the discomfort reports in the upper back are higher than 20%, and they are possible associated with the larger quantities of products the worker has to displace
6	Ergonomic Survey In Garment Manufacturing Industry; A Research Introduction (Ms.RiddhiA. Chopde,2018)	International journal of science ,spirituality ,business and technology	Ergonomics, Garment Industry, MSD Musculoskeletal disorders.	`The study includes improvement in work design, machine layout and working conditions with the objective of	literature review identified gaps in the research and a set of investigative questions were derived from the review

				providing maximum comfort to workers	
7	Literature Review on Ergonomics Risk Aspects Association to the Power Loom Industry(Somnath Kolgiri et.al,2016)	Journal of Mechanical and Civil Engineering (IOSR-JMCE)	power loom industry; ergonomics risk aspects; working postures; work layout; work environment.	Exhaustive literature review	ergonomics mainly can be defined as the relationship between humans, machine systems, job design and the work environment.
8	The role of ergonomics towards performance improvement (KemRamdass, Leon Pretorius ,	Unisa Institutional Repository	ergonomics, office, productivity improvement, call center	The research comprised a qualitative exploratory and descriptive design. The purpose of the exploration was to report the current phenomenon of ergonomics through systematic observation (Cooper and Schindler, 2006).	Good ergonomics means more than putting in some new equipment. It needs to be an ongoing programme that includes management leadership and training.
9	The Role of Ergonomics for Construction Industry Safety and Health Improvements(In -Ju Kim et.al ,2017)	Journal of ergonomics	Construction works and safety and health, MSD(Musculoskeletal Disorders)	Exhaust literature review	ergonomics research should promote the importance of ergonomics in the construction sector
10	An Ergonomics Study of Four Wheel Vehicles: A Review Paper,(Sandeep Kumar Pandey,2017)	International Journal of Engineering Trends and Technology (IJETT	Design Product, Ergonomics, WSMD	Exhaust literature review	Most of the study related to ergonomics in automobile design is limited to driver's seat only. There is no proper study carried to find optimum result considering the control parameters like accelerator

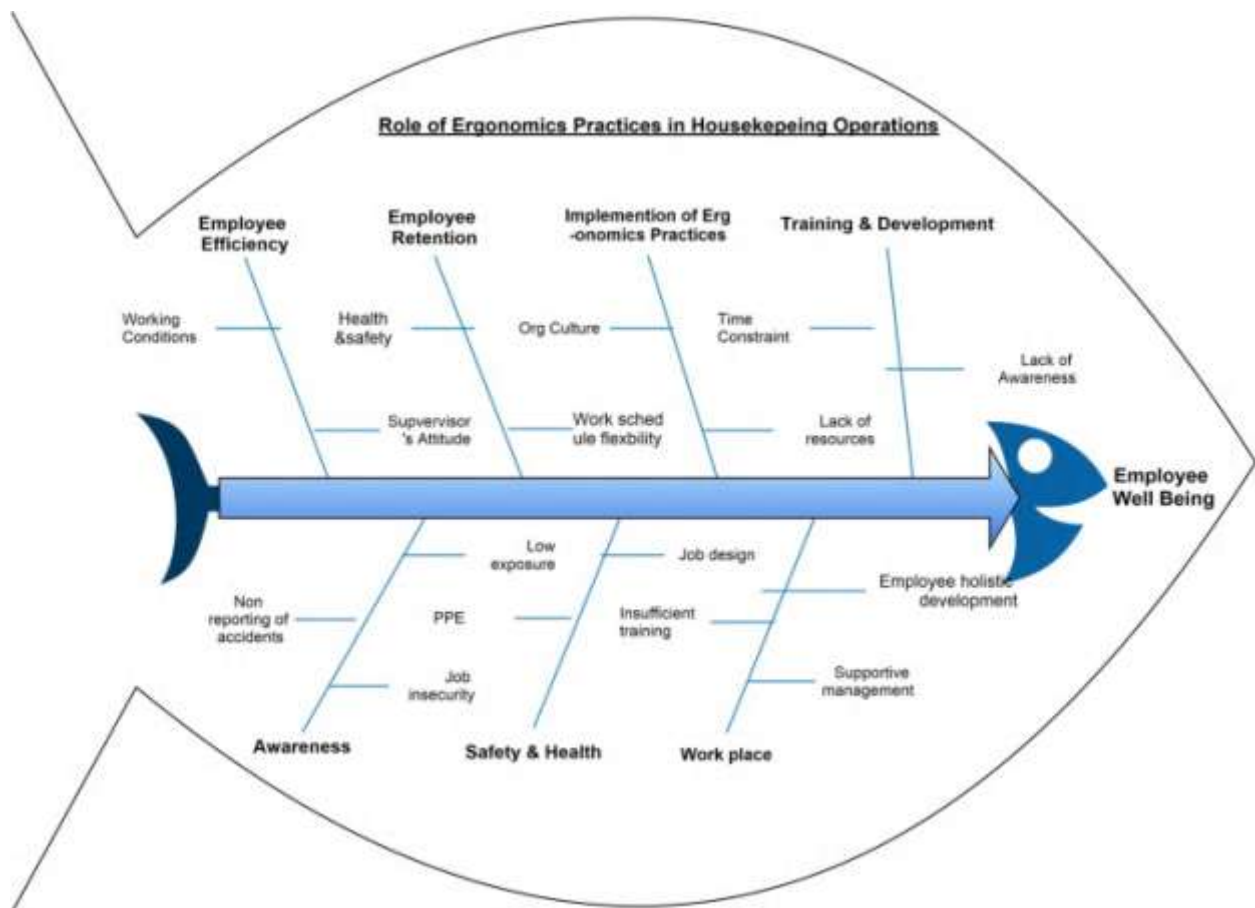
					pedal, steering wheel, gear lever etc. of a car.
11	Ergonomic assessment of musculoskeletal disorders from load-lifting activities in building construction	International Journal of Advanced Engineering Technology	Work-related musculoskeletal disorders, load-lifting, recommended weight limits, and Lifting Index, distance Multiplier, optimum lifting index.	National Institute for Occupational Safety and Health (NIOSH) Lifting equation by Waters et al (1993) is employed for the calculation of the Recommended Weight Limits (RWL), and Lifting Index (LI	healthy and productive workforce, employers must ensure that their workers do not exceed the optimum lifting indexes
12	Ergonomics: The Study of Work(U.S. Department of Labor Occupational Safety and Health Administration,2000)	OSHA Guidelines	Work-related musculoskeletal disorders, load-lifting, recommended weight limits, and Lifting Index, ergonomics, work life balance	Report	It is regarding guidelines of Occupational Safety and Health Administration
13	Occupational Stress, Burn Out, Job Satisfaction, Quality Of Life Among Ward Attendants Working In General And Psychiatric Hospital: A Comparative Study	Ranchi university(Dissertation)	Job Satisfaction, Working hours ,QWL, Manual work ,Stress, Health	Occupational Stress Index, Copenhagen Burnout Inventory, WHOQOL-BREF tool, statistical package of social science (SPSS)	ward attendants are more stressed in their job and feel burned-out than general hospital ward attendants,
14	A Study Of Job Stress On Job Satisfaction Among Virtual Workers In Information Technology: An Empirical Study	Capella University(A Dissertation Presented in Partial Fulfillment Of the Requirements for the Degree Doctor of Philosophy)	job stress, IT workers, job satisfaction, Virtual Workforce, Social activity	had 403 respondents, moderated hierarchical regression to test all moderating effects,	results also indicated that there is no different level of job stress based on conflict at work, role ambiguity/conflict, job control, excessive workload, performance

					pressure,
15	Workplace Disability Management Programs Promoting Return to Work: A Systematic Review	Campbell Systematic Reviews	Organizational health and safety, Workers' compensation, Workplace disability management, Disability Management, Education of workplace staff	Literature review	Resources can be optimized by developing internal systems and hiring in-house professionals, which may be cost-prohibitive and give employers access to elements in the physical, interpersonal and administrative work
16	Occupational Safety and Health Interventions to Reduce Musculoskeletal Symptoms in the Health Care Sector,(Jessica M. Tullar etal.2010)	Journal of Occupational Rehabilitation	Health care ,Occupational health, Interventions ,Musculoskeletal	Questionnaire	“multi-component patient handling” interventions (MCPHI) included three components: an organizational policy that defines an organizational commitment to reducing injuries
17	Occupational Safety and Health Interventions to Reduce Musculoskeletal Symptoms in the Health Care Sector,(Tullar et al.2010)	J Occup Rehabil (2010) 20:199–219	Health care ,Occupational health, working hours ,health causes	Exhaustive literature review	Yes, occupational safety and health interventions in health care settings have an effect on MSK health status
18	Ergonomics: Origins, Focus, and Implementation Considerations (Sluchak, Thomas 1992)	AAOHN Journal	Human performance, psychology ,personnel management ,ergonomic factor ,osha practices	Exhaustive literature review	All staff should be familiar with ergonomics and osha practices
19	The relationship between payment systems, work intensification and health and safety outcomes: a study of hotel	Policy and Practice in Health and Safety	Occupational safety and health, piece rates, room attendants, work intensification	Case study data are drawn from semi-structured interviews with manager	strategies for reducing injury among attendants must be developed with a full awareness of the psychosocial

	room attendants				factors
20	Managerial Practices that Support Lean and Socially Sustainable Working Conditions(Håkansson, Malin et al.2017)	Nordic Journal of Working Life Studies	Employee effects , lean production , managerial practices .sustainability ,working conditions	interviews were complemented with employee questionnaires	contributed to a better understanding of the interactive and mutually dependent relationships between work context, managerial practices, lean practices, and employee engagement
21	Effects on musculoskeletal pain, work ability and sickness absence in a 1-year randomized controlled trial among cleaners,(Marie B Jorgensen et al.2011)	BMC Public Health 2011	High physical work demands increase the risk of musculoskeletal pain , impaired work ability and long term sickness absence	A cluster-randomized controlled trial was conducted among 294 female cleaners allocated to either Physical coordination training (PCT), cognitive behavioral training (CBTr) or a reference group (REF). Questionnaire	explorative analyses revealed a treatment effect for musculoskeletal pain of the PCT.
22	Cleaning Up After Globalization: An Ergonomic Analysis of Work Activity of Hotel Cleaners(Ana Mari'a Seifert and Karen Messing,2006)	University' du Quebec a' Montreal,	Outsourcing, Work Analysis, Room Assignments, Housekeeping workers	Observations and interviews were conducted between September 2000 and May 2001 for 60 guest room attendants	such problems we think that it is vital to support the development of ergonomic requirements that are based on the general promotion of health rather than specified, limited operations (
23	The world at work: hotel cleaners, (Yu-Chin (Jerrie) Hsieh,2012)	Occup Environ Med 2013	Physical hazards, room attendants, OSHA, Psychosocial hazards, Measure to protect housekeeper	Literature review	highly underserved occupational segment, hotel cleaners are exposed to a multitude of disproportionately high work-

					induced hazards resulting in adverse physical, ergonomic, chemical, biological and psychosocial afflictions and conditions
24	Caring for housekeepers (Mest.2013)	Executive Housekeeper	Cart misuse, ergonomics, housekeeping cleaning staff	Article	Most injuries happen within 90 to 120 days after a hire, then grow increasingly rare. If you address turnover, you address injuries
25	Working hours, work-life conflict and health in precarious and "permanent" employment, Philip Bohlea, Michael Quinlana etal.	Rev Saude Publica	Employment. Work hours. Shift work. Working conditions. Occupational Health. Workers. Family	Thirty-nine convergent interviews were conducted in two five-star hotels.	casual employees had less desirable and predictable work schedules, greater work-life conflict and more associated health Complaints than "permanent" workers.
26	Health and safety considerations for hotel cleaners during Covid-19, Marie-Anne S. Rosenberg ,2020	Occupational medicine	Hotel Housekeepers, Covid 19,Procedure ,Policy change	Article	It is important to keep the health and safety of hotel workers, particularly the cleaners, at the center of such operations.

Source- <https://www.proquest.com/>



A Study model on basis of extensive literature review (1.1)

Musculoskeletal Disorders (MSD)

Work-related musculoskeletal disorders are impedances of substantial structures such as muscles, joints, tendons, ligaments, nerves, bones and localized blood circulation that influence or disturbed fundamentally by work and/or by the work environment. The causes of work-related MSDs are multifactorial in root and aggregate, counting physical, ergonomic, psychosocial and other variables with rehashed introduction over a long period of time. In any case, MSDs can moreover be intense injuries, such as breaks, disengagements of joints etc..

As indicated by Mest (2013) there is a connection among turnover and inn servants' wounds. Musculoskeletal wounds are the most widely recognized among lodging servants because of the physical requests of the prerequisite of employment. This recommends lodging servants will depend on specialist pay claims, notwithstanding, there is restricted research with respect to these cases and their value. Krause, Dasinger and Neuhauser (1998) recommend that altered work programs are financially savvy, to be specific light obligation, ergonomic gear change, reviewed work introduction and "employment training." Hotel servants who face wounds at work can exploit adjusted work programs until they recoup from their wounds. Given the workplace, which upgrades work worry among inn maids, it is significant for them to get mental help and become mindful about physical instruments of their activity errands.

Research Gap - The research work conducted in this particular field is found to be less in India exclusively regarding ergonomics practices in hotel. Many researches have been done in this field but following variables are still unexplored in the context of hotel industry. Buchanan et al(2012). Analyzed

the reported injury rate for hotel housekeepers 7.9% was higher than for other jobs within hospitality industry. It has been noted that hotel housekeepers are more susceptible to a lot of health hazards than other staff in different departments in the hotel industry (Buchanan et al., 2010; Bureau of Labor Statistics, 2013). Such studies remain unexplored among developing countries including Ghana. Studies on working conditions of hotel staff are mainly on casual workers who are temporal and are mostly focused on European workers (Krause et al., 2005)

Current methods of approach (Job rotation, Job enrichment) for preventing occupational hazards faced by hotel housekeepers and forms of rehabilitating the injured workers remain under developed and unforced by law. **(Law of Hotel Housekeepers, 2014).**

III. CONCLUSION

Many areas are still to discover regarding ergonomics practices which need to cover by researchers so that issues and challenges of hotel housekeeping employees will be addressed. Employees have to be aware regarding these practices at work place as well as employer; both sides have to acknowledge importance of ergonomics practices. In Indian hospitality industry, employers have to prepare action plan for implementing these practices.

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