

Effect of Ergonomics Risk Factors on Housekeepers in Hotel Operations

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Abstract

The study deals on the effect of ergonomics risk factors on housekeepers in hotel operation. “Ergonomics is the theoretical and fundamental understanding of human behavior and performance in purposeful interacting socio-technical systems, and the application of that understanding to design of interactions in the context of real settings. Hotel employees have higher rates of occupational injuries and sustain more severe injuries than most other service workers. Housekeeping employees under the category of non-unionized workers, immigrants, or politically vulnerable individuals are less likely to report work-related injuries. The major objectives of the study include; to examine the level of awareness about the concept of Ergonomics amongst the Housekeeping staff of the hotel, to determine the level of application of Ergonomics in Housekeeping department of hotels and to examine the impact of ergonomics in Housekeeping department of hotels. Based on the analysis conducted, the findings revealed that 96 % of the Housekeeping staff is aware about the concept of ergonomics in Hotel Housekeeping. About 48% of housekeeping staff is aware that ergonomics is a practice of designing equipment's. About 44 % of housekeeping staff is aware that Ergonomics is a means for adjusting the work environment as per the convenience of the cleaning staff. However, the study recommends that on the job training should be provided to the housekeeping staff to make them aware about the ergonomics practices. The training should be based on proper use of equipment so as they do not exert the body. Job rotation in other housekeeping areas is required to avoid overtime.

Keywords: *Ergonomics Risk Factors, Housekeepers and Hotel Operation*

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Background to the Study

The hospitality industry is a major recruiter of low wage workers with the majority working in housekeeping departments (Krause, Rugulies & Scherzer, 2005). In most hotels, the cleanliness of guestrooms is one of the most important service standards expected by customers. Ergonomic risk factors are the aspects of a job or task that impose biomechanical stress and health hazards on employees on the worker. Housekeeping is the act of maintaining clean, pleasant, safe, orderly and comfortable environment to enhance high patronage and profitability in the industry. The role of the housekeeper is thus critical to service provision and hotel profitability and return patronage by customers (Faulkner & Patiar, 1997).

All establishments in the lodging industry require hotel housekeeper cleaning services. This service varies depending on the type of lodging establishment in question (Raghubalan & Raghubalan, 2009). For example, in five star hotels housekeeping services are required every hour of every day of every year (Jones, 2007). In most hotels, the cleanliness of guestrooms is one of the most important service standards expected by customers. The role of the housekeeper is thus critical to service provision and hotel profitability (Faulkner & Patiar, 1997).

As an occupation, housekeepers are the largest workforce in the hotel industry and constitute 26% of all hotel employees (Bureau of Labor Statistics, 2003). The hospitality industry is a major recruiter of low wage workers with the majority working in housekeeping departments (Krause, Rugulies & Scherzer, 2005). The hourly pay for hotel housekeepers varies among different states in the US, although the average pay for hotel housekeepers is above the national minimum wage in the majority of states in the country. That said, housekeepers have very little chance of advancement through their careers (Shankman, 2014). With regard to the work shifts of housekeepers, corporate hotels like Marriott have a specific housekeeping work schedule of eight-hour shifts and five-day workweeks. However, these schedules are subject to change based on season, room occupancy and customer's cleanliness actions within the hotels (Shankman, 2014).

Front-line employees can help improve the quality standards of the hotel (Jones, 2007). However, and on the other hand, housekeeping staff are not included in setting these standards as they have very low command over their job and there is a lack of constructive communication with management (Woods & Viehland, 2000). Regarding communication with managers, studies have revealed that managers were found to be disrespectful to female housekeepers, with many of them failing to respect women's work roles (Kensbock, Jennings, Bailey & Patiar, 2013; Sonmez et al., 2013). Similar studies also found inequitable rewards distributed among housekeepers for their contribution. Their concerns may be well founded as several studies have documented that oppressive supervisory behavior quietened the concerns of housekeepers regarding work performance. These concerns, if noticed, could have helped improve hotel operations (Kensbock, Jennings, Bailey & Patiar, 2013; Krause, Rugulies & Maslach, 2010). Marginalization and oppression are the supervisory behaviors towards housekeepers work in hotels.

Marginalization refers to room attendants' exclusion from decision making and social acknowledgement based on the undesirable nature of their job (Kensbock, Jennings, Bailey & Patiar, 2013).

Besides the poor nature of housekeeper's work, hotels see housekeeping as a labor expense to be cut (Sturman, 2006). Low pay, low prestige and low barriers to entry and exit make housekeeping departments infamous for their high turnover rates, with this turnover contributing to housekeepers' performance inconsistencies (Sturman, 2006). There are many different methods to measure housekeepers' performance like customer feedback and supervisor's inspection of cleaning methods. In the study by Sturman (2006), for example, it was found that housekeepers are in constant use of cleaning chemicals with performance measurements based on the amount of cleaning chemicals used. However, the amount of chemicals used varies according to room types, stay over or check out status, number of rooms cleaned, nature of guests and other external circumstances. These variations make it difficult to identify consistency in performance accurately. An additional note, these chemicals used by housekeepers are hazardous in nature (Hsieh, Apostolopoulous & Sonmez, 2013).

The physical workload of hotel housekeepers involves tasks such as packing trolleys with linen and other amenities, emptying bins, stripping and replacing towels and bed linen, dusting, cleaning bathrooms, vacuuming, mopping floors and replacing amenities (Oxenbridge & Moensted, 2011). These tasks are important for customer comfort, hygiene, and safety (Powell & Watson, 2006). The number of rooms cleaned is decided by the management and varies from hotel to hotel as labor contracts play a major role (Krause et al., 2005). If the workload exceeds the limit of 15 rooms cleaned per day, it is believed that it will lead to a number of injuries to housekeepers (Mest, 2013). Studies by Burgel, White, Gillean and Krause (2010) suggest that there is a significant association with shoulder pain and psychosocial job factors. Psychosocial factors relate to work overload, time pressure and payment systems are also common contributors to risk factors for musculoskeletal injuries (Oxenbridge & Moensted, 2011, p.8).

Overall, hotel cleaners are predominantly women, immigrants and minorities working under difficult conditions such as long hours, ergonomic strain, chemical exposure, poor pay, low job control, job insecurity and a wide array of other physical and mental health risks (Krause et al., 2005; Sonmez et al., 2013). Data regarding percentage of immigrants and minorities are not readily available and the data collected by the Bureau of Labor Statistics (2016) or Census Bureau of American Fact Finder (2016) suggest generalized national data which are neither specific to states nor ethnicity. For example, it does not provide information specifically about immigrant hotel housekeepers. Many studies to date have focused on correlation with housekeepers work and low wages or illness and injuries but there is a paucity of studies on relationship between prevalence of pain among hotel housekeepers and work experience in five star hotels. Additionally, there are limited research studies about prevention methods and ways to prevent work hazards in housekeeping department. This research study, therefore, aims to provide

recommendations to practitioners about necessary changes required in work conditions of hotel housekeepers but first, the problem statement of the issues faced by hotel housekeepers and their work condition are discussed as follows.

Problem Statement

In light of the studies reported in the preceding section, problems pertaining to physical workload, ergonomic problems and the prevalence of pain are widespread among low wage hotel housekeepers. In part magnified by a lack of support and respect from supervisors (Kensbock, Jennings, Bailey & Patiar, 2013), this study examines the extent to which the working environment for hotel housekeepers is safe.

According to Mest (2013) there is a link between turnover and hotel housekeepers' injuries. Musculoskeletal injuries are the most common among hotel housekeepers due to the physical demands of the requirement of job. This suggests that hotel housekeepers will rely on worker compensation claims, however, there is limited research regarding these claims and their usefulness. Krause, Dasinger and Neuhauser (1998) suggest that modified work programs are cost effective, namely light duty, ergonomic equipment modification, graded work exposure and “job coaching.” Hotel housekeepers who face injuries at work can take advantage of modified work programs until they recover from their injuries. Given the work environment, which enhances job stress among hotel housekeepers, it is important for them to get psychological assistance and become aware about physical mechanisms of their job tasks.

Recent literature on occupational injuries in the hotel industry suggests that there is a disparity in rates of injuries between genders and races. Additionally, rate of injuries differs among different companies (Buchanan, Vossen, Krause, Moriarty, Frumin, Shimek & Punnett, 2010). This suggests that individual companies can take initiative to make necessary changes in order to decrease injury rates. Other psychosocial factors that emerged from previous literature are discussed as follows. Several researchers suggested that time pressure, low job control, low wages, low job security and limited opportunities for advancement are the characteristics of guest room cleaning work (Krause et al., 2005; Bernhardt et al., 2003; Lee & Krause, 2002), after having examined hotel housekeeper's work. Nevertheless, the minimum time taken to clean guest rooms suggests that the housekeeping department is efficient (Hsu, Ho, Tsai, & Wang, 2011).

Objective of the Study

The main objective of the study is to examine the effect of ergonomics risk factors on housekeepers in hotel operations. The specific objectives are;

- i. To examine the level of awareness about the concept of Ergonomics amongst the Housekeeping staff of the hotel
- ii. To determine the level of application of Ergonomics in Housekeeping department of hotels
- iii. To examine the impact of ergonomics in Housekeeping department of hotels.

Research Questions

The following research questions shall guide the study

- i. What is the level of awareness about the concept of Ergonomics amongst the Housekeeping staff of the hotel?
- ii. What is the level of application of Ergonomics in Housekeeping department?
- iii. What is the impact of ergonomics in Housekeeping department of hotels?

Literature Review

In reviewing published research on occupational injuries and illness, it was evident that very little scholarly work has been published in the domains of hotel housekeeper's health and safety to date. Through a review of the literature in specific to hotel housekeepers work conditions, three areas of research come to fore, namely physical workload, ergonomic problems and prevalence of pain among hotel room cleaners. Consistent with academic research in the hospitality field are the findings from a recent study by the National Institute for Occupational Safety and Health (NIOSH) in the U.S. which states that housekeepers with musculoskeletal injuries are under researched (Bearnard et al., 1997), with limited knowledge and research also evident among dishwashers, cooks and other service sector workers (Sengupta et al., 2002). The new research agenda for the National Institute for Occupational Safety and Health (NIOSH) for the next ten years (2016-2026), is thus set to focus on protection from work-related safety and health hazards with the promotion of injury and illness prevention in purpose of supporting employee well-being (Howard et al., 2016).

With the hotel industry being so labor intensive, it is perhaps no surprise that in addition to workload and work conditions, the issues of workplace injuries and illness is of such prevalence as evidenced in the studies by Krause, Scherzer and Rugulies, (2005), Krause, Maslach and Rugulies, (2010), Premji and Krause, (2010) to name but a few. This body of work has its origins in studies by Frumen, (2006) and Liladrie, (2010) with the earliest studies going as far back as Bigos, Battie, Spengler, Fisher, Fordyce, Hansson and Wortley, (1991) which studied aircraft employees of Boeing in the State of Washington, US with results which suggests that physical prevention methods were unsuccessful as employee back pain persisted.

In the specific context of hotels and hospitality a number of studies (see for example Landers & Maguire, 2004; Krause, Rugulies & Scherzer, 2005; Premji & Krause, 2010; Liladrie, 2010; Burgel, White, Gillen & Krause, 2010; Buchanan et al., 2010; Yap, 2011; Sanon, 2013) show the relation between different factors at work and injuries in different parts of the body. One such example is the highly demanding physical strains of the jobs of housekeepers, which puts them in a greater risk for pain in the back and shoulder (Frumin, 2006). For the most part, hotel housekeepers work alone with limited interaction with other housekeepers on the job (Wells, 2000). The study, which was conducted in Las Vegas, showed that 29% of hotel cleaners ranked shoulder pain as very severe on a scale of none to very severe. Latinos are the majority in terms of ethnicity among Las Vegas housekeepers. Respect and recognition from others are considered as rewards although, despite this fact,

there was the lack of respect from supervisors, which is a major concern for Las Vegas hotel cleaners. Across the Nigeria hotels, housekeepers face a lack of respect and recognition from managers (Hsieh, Apostolopoulous & Sonmez, 2013). In a similar study Frumin, (2006) found that there was a strong association with effort-reward balance and shoulder pain than job content (Burgel, White, Gillen & Krause, 2010).

Workplace injuries are not the only issue for hotel housekeepers with a myriad of other issues of concern debated in the literature outlined in this study. Such areas include ethnicity (Premji & Krause, 2010; Yap, 2011), diversity in the workplace and the need for diversity management practices (Enz, 2009; King et al., 2011), recruitment of bilingual staff, cross cultural training (Manoharan, Gross & Sardeshmukh, 2014) and absenteeism (Yap, 2011; Mest, 2013). According to a study by Woods and Viehland, (2000) American Hotel & Motel Association (AH & MA) revealed that out of 513 total housekeeping managers in Nigeria, 315 are women which is 61.4% of hotel housekeeping managers are women. A higher percentage of entry-level hotel housekeepers are also women. Some of the reasons behind these concerns such as need for diversity management practices, absenteeism etc. include the fact that housekeepers are very often disadvantaged socio-demographically as compared to other working populations, with some groups facing more adversity than others due to ethnic origin, language and immigrant status (Buchanan et al., 2009). Consistent with hotel housekeepers in Canada, the majority are immigrants of either African or Latin American descent (Seifert & Messing, 2006). More than a decade ago, a study by Selwitz (2001), observed the lack of communication skills among housekeepers in Nigerian properties.

In studies conducted in the U.S., it was found that Hispanics and non-English speaking workers are disadvantaged as compared to other workers in getting worker compensation due to burdensome processes or employers not being willing to take action (or discouraged by medical providers) eventually refraining housekeepers from reporting injuries or illnesses (Hsieh et al., 2006; Krause et al., 2009). Other reasons for not reporting workplace injuries observed in Las Vegas hotel room cleaners include high denial rate of worker's compensation claims, which creates a barrier to these workers. Additionally, the hotel workers believed their pain would subside and did not report injuries because these workers perceive it as manageable but the workplace injury was severe as shown by absence from work, sick leave for pain and pain medication used by these housekeepers. Even if the claim was accepted, wage replacement benefits are considerably lower than regular take-home pay (Scherzer, Rugulies & Krause, 2005).

According to the 18th Annual Report of the National Academy of Social Insurance on workers' compensation benefits, coverage, and costs, (2013) in Florida, for instance, total benefits decreased in 2009-2011 (-2.9%), followed by a sharp increase in 2011-2013 (+9.5%).

A number of factors contribute to variations in total workers' compensation benefits paid within a state from year to year. Some of the reasons behind such modification are changes in the number of work related injuries and illness, fluctuations in the state labor market and

changes in the cost of medical care. Research by Oshins and Johnson (1992), suggests that Hilton Hotel Corporation through a self-insurance program took the workers' compensation problem into their own hands with regional offices throughout the US to handle the claims.

Ethnicity, gender and employer play an important role in exploring the social environment, ergonomics and safety hazards at workplaces (Buchanan et al., 2010). Since there are differences of injury rates among different employers, it is significant in understanding workplace injuries in urban area hotels like New York and San Francisco. The following literature review discusses about workload, ergonomic problems and prevalence of pain among hotel housekeepers. Literature on workplace injuries caused by heavy workload put on hotel housekeepers by managers is discussed as follows in the next subheading.

Workload

Housekeepers 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 and many employees in the department. Housekeeping departments contribute directly to hotel expenses and income so when the housekeeping quality is fixed, the department is efficient (Hsu, Ho, Tsai & Wang, 2011). The housekeeping department is considered low skill work, which requires abilities like attention to detail, customer interaction and considerable physical strength to perform tasks. Housekeeping departments of hotels are the backbone of the accommodation sector (Bernhardt, Dresser & Hatton, 2003). The majority of studies on workload related stress to date have been completed by Borg and Kristensen, (2000), Davis and Haney, (2000), Krause et al. (1997), Krause et al. (1998), Krause et al. (1999), Parker and Krause, (1999) and Krause et al. (2003). Some of these studies are in the public sector such as public transit, airlines and healthcare, the results of the research study in hospitality sector suggest there is a strong association with physical job factors and pain outcomes among housekeepers.

Hotel room cleaners are generally paid on an hourly basis and work eight hours a day (Krause et al., 2005). Management decides the number of rooms cleaned on a daily basis, which may vary from one hotel to another as labor contracts need to be followed (Krause et al., 2005). The average number of rooms, excluding check-out rooms, a housekeeper can complete while avoiding the possibility of risk of injury is 15 rooms per day. If a housekeeper goes beyond 15 rooms per day then housekeeping management must deal with more injuries faced by housekeepers (Mest, 2013). A practice observed in U.S. hotels are when the number of housekeeping staff are not enough to complete the daily tasks of the hotel, the best solution by management is to force housekeepers on duty to work overtime with the need to work overtime is widely considered as a requirement of the job (Bernhardt, Dresser & Hatton, 2003). Nowadays, the hotel industry has adopted a web-based labor scheduling systems, which is an application service provider, which schedule employees by demand forecasts, most importantly rules are enforced in the system to avoid over staffing (Jones, & Siag, 2009).

However, there is no rule, which avoids the under-staffing situation in housekeeping department. The housekeepers complained that the efforts they put into work were not rewarded equitably. The physical workload and ergonomic problems had an effect on effort reward imbalance and health concerns. All the Las Vegas health cleaners studied had health plans provided through a union-company trust fund. The same study found that Latinos had a low health score compared to the overall U.S. population. A New York Times article, which is now a decade old, explains the current situation of working condition of hotel housekeepers in five star properties. The article reported that brands like Hilton and Westin, which are located in major cities like Honolulu and Chicago, wanted to resemble royal bedrooms and revamped guest rooms with heavier mattress, more pillows and more amenities like bathrobes and coffeepots (Greenhouse, 2006).

These hotels added extra tasks to the housekeeper's daily workload like putting the bathrobe on a hanger and washing coffeepots. The hotel housekeepers' union noticed that these refurbished rooms, lead to an increase in injuries. Even though the number one priority of this union is to increase wages for hotel housekeepers, they took this issue as momentous to inquire with the employers (Bernhardt, Dresser, & Hatton, 2003). Since brands like Westin started to make their rooms more appealing to customers, with "heavenly beds" introduced in 1999, competitors such as Marriott, Crowne Plaza followed suit by spending millions on softer sheets, feather filled duvets, and other linen amenities. Yet, Hilton also made other changes like removing bathtubs from king sized rooms and replacing box television with flat screen televisions which helped relieve the room cleaning process (Bernhardt, Dresser & Hatton, 2003). Overall, these changes increased the job tasks that could lead to possible injuries for hotel housekeepers but consequently, for guests, American Hotel and Lodging association found positive responses of better sleep and comfortable stay.

Consistent with literature about hotels in Montreal lavish amenities were added to attract customers. Guests on business travel to Montreal were perceived to spend more and were target groups of these new refurbished hotels that wanted to attract these customers before their competitors. These marketing efforts increased the workload of Canadian hotel housekeepers as they have to clean coffeemakers and trays of food products. Additionally, the changes of heavier mattresses and extra bed sheets led to increase in housekeeper's efforts in room cleaning (Seifert & Messing, 2006). Heavy workload coupled with ergonomic problems thus lead to increase in job stress as discussed in the following section. Consequently, the following relationship was hypothesized:

Ergonomic Problem

Hotel housekeepers are required to clean hotel guestrooms; they have specific tasks to complete in their shift work within a limited time period (Raghubalan & Raghubalan, 2009). The many hazards which can be faced by hotel housekeepers are physical, chemical, biological and psychosocial have been studied in the US by many researchers (Makulowich, 1996; Selwitz, 2001; Hsieh, Apostolopoulos&Sönmez, 2013). The physical hazards faced by hotel housekeepers are caused due to repetitive housekeeping functions.

The daily task of housekeepers are making beds (repeated forward trunk flexion and rotation), moving cleaning carts (pushing and pulling), lifting and lowering loads (repeated trunk flexion/extension and rotation with poor body mechanics), cleaning bathroom, i.e. tubs, floor and toilet (repeated forward trunk flexion and rotation, poor body mechanics, lifting), vacuuming, dusting and cleaning (poor body mechanics, lifting, forward trunk flexion and rotation), trash removal and lifting/ repositioning furniture (repeated lifting with trunk flexion/extension and rotation) (Landers & Maguire, 2004). Table 1 shows the list of daily tasks and body movements.

Exposure to chemicals used for cleaning toilets and, sinks can irritate the skin and cause other respiratory diseases (Sonmez, Hsieh & Apostolopoulos, 2013). Other possible risks of volatile organic compounds include respiratory problems and cancer and exposure to solvent- based products can be damaging to kidneys and reproductive organs (Stellman, 1998). Biological hazards such as exposure to broken glassware and medical waste left by guests create risks for infectious diseases such as hepatitis (Makulowich, 1996).

Table 1 Job tasks that can lead to injuries

Job tasks that can lead to injuries	Movement of the body
Making Beds	Pushing and Pulling
Moving Cleaning Carts	Repeated trunk flexion/extension and rotation with poor body mechanics.
Lifting and Lowering Loads	Repeated trunk flexion/extension and rotation, poor body mechanics, lifting.
Cleaning Bathrooms (i.e. tubs, floor and toilet)	Repeated forward trunk flexion/extension and rotation, poor body mechanics, lifting.
Vacuuming, Dusting and Cleaning	Poor body mechanics, lifting, forward trunk flexion and rotation.
Trash Removal and Lifting/ Repositioning Furniture	Repeated lifting with trunk flexion/extension and rotation.

Source: (Landers & Maguire, 2004)

Psychosocial factors, which are work related stress, caused by heavy workloads coupled with time constraints. To add to these factors, hotel housekeepers face a lack of support and respect from supervisors (Hsieh, Apostolopoulos & Sonmez, 2013). On the other hand, Mest (2013) challenges U.S. hotels to train housekeepers on the consequences of their

cleaning methods and improved ways of handling equipment to prevent causing health and safety risks for themselves. For instance, on many occasions housekeepers pull heavy objects including housekeeping carts and fill plastic bags full of wet linen, swing it over their backs, and drag it across the floor, this kind of actions cause back strain. Additionally, hotel housekeepers use their necks to push pillows into pillowcases, which cause neck strain and aches (Mest, 2013).

It was observed in Montreal hotels that cleaners were not involved in equipment purchase which resulted in carts being too heavy and push bar too high for room cleaners. Furthermore, cleaners in these hotels were faced with conflicts within their group caused by time-pressured work. The cleaner's workload required the association of physical, mental and emotional demands coupled with the necessity to follow newly implemented procedures by employers (Seifert & Messing, 2006). Housekeepers are expected to perform conventional cleaning, which requires the use of chemicals that may not be "green cleaning products" (Jones, 2007). Housekeepers are provided with gloves soaked in oil to collect dust while performing their duties but there is very little evidence among practitioners and researchers about the efficiency of such innovative items used by hotel housekeepers for cleaning purposes. Equipment such as vacuum cleaners, if not working properly, will cause the housekeeper to spend time trying to fix it or get it fixed during their work shift instead of completing the work for that day (Raghubalan & Raghubalan, 2009).

Housekeepers are faced with many ergonomic problems in relation to equipment and supplies on a daily shift but they have to ensure rooms and bathrooms look clean at the very least, at the surface level. Furthermore, in most Nigeria hotels, the room check completed by housekeeping management are superficial cleaning standards (Raghubalan & Raghubalan, 2009). There is very little information recorded in the literature about the efficiency of methods used hotel housekeepers for bed making especially putting sheets and pillowcases, which requires a lot of effort by housekeepers. The constant movements on a daily basis will definitely have an effect of wear and tear on the body of hotel housekeepers.

Prevalence of Pain

There is limited research about prevalence of pain among hotel housekeepers, as researchers have not attempted to cover such research studies. A study suggested that work-related musculoskeletal disorders of the neck/shoulders, arms, elbows, wrists, and hand are the leading occupational health problem (Schleifer et al., 2002). Sixty-two percent of all housekeeping injuries were identified as musculoskeletal injuries, which result in the loss of flexibility and strength, overexertion, muscle fatigue and functional disability (Montross, 2013). The Bureau of Labor Statistics does not provide rates of occupational injuries for a single occupation. The reason behind this was a change in Occupational Safety and Health Administration (OSHA) rule for defining a recordable injury/illness. This rule change explained the decline of reportable workplace injuries in manufacturing industries but there was not a significant change in trend in services sector in the past couple of years. Another reason of the decline was to show that employers and workers in the private sector made occupational safety and health a priority (Friedman & Frost, 2007).

There is clinical evidence that women are more susceptible to stress-related and autoimmune disorders compared to men (Bourke, Hareell & Neigh, 2012). This should be a concern of housekeeping management, considering that the majority of hotel housekeepers are women, although there is a small percentage of male housekeepers (Buchanan et al., 2010). The hyperventilation model created by Scheifer, Ley and Spalding (2002) suggests that psychosocial aspects of work might contribute to the development of musculoskeletal disorders, the gradual result of stress factors, emotional strain, muscle tension, muscle pain to final work-related musculoskeletal disorders. “The theory suggests psychosocial risks can cause emotional strain which results in hyperventilation. Hyperventilation is alteration from abdominal breathing to chest breathing which increases the biomechanical load of the ancillary muscles of respiration” (Deeney & O'Sullivan, 2009).

A study that investigated Occupational Safety and Health Administration (OSHA) reported injury within the hotel industry for job categories of hotel housekeepers, cooks, stewards and banquet servers in full service hotels and found the majority of housekeepers to be unionized. Accordingly, the researchers worked with the union, received data from their employee rosters, and checked the Occupational Safety and Health Administration (OSHA) log records for the 2003-2005 period (Buchanan et al., 2010). The injuries were coded as three different types: for instance, “MSD” for musculoskeletal disorder, “acute trauma” and “others”. The researchers studied five companies; study found that housekeepers were twenty-one percent of the workforce. The highest overall injury rate and the highest rate of MSD and acute trauma were among housekeepers and cooks. Hispanic workers compared to Asians, Blacks and Whites had the highest overall injury rate. The same study reported a second company to have the highest rate of injury for housekeepers followed by the third and fourth companies. Injuries varies among a number of factors, namely; gender, ethnicity, job title and hotel company. Furthermore, individual companies need to investigate discriminatory work practices. Agency hired hotel housekeepers is a common practice due to lower terms, conditions and compensation (Sanon, 2014). The same study about agency hired hotel housekeepers concludes that in-depth research with the help of occupational health professionals about agency hired hotel housekeepers' vulnerability to injuries and the need for policies to meet their health needs should be a future study.

Psychosocial factors at work increase the risk of musculoskeletal disorders (Schleifer et al., 2002). This study suggests hyperventilation-induced by job stress contributes to the development of musculoskeletal disorders. Furthermore, the decrease in muscle tissue oxygenation and buildup of metabolites due to repetitive tasks can lead to tissue damage. Imbalances between job demands and an individual's resources to cope will inevitably occur. A way to cope suggested by Schleifer et al. (2002) is relaxation and breathing training as rest breaks are effective tools for reducing musculoskeletal discomfort. Another suggestion by a senior consultant at American Hotel and Lodging Association, is stretching activities before shifts begin, a good use of time to reduce preventable injuries (Mest, 2013). Development and implementation of effective ergonomic systems that

promote use of safer body mechanics during bed making (Montross, 2013). In addition, management needs to make a commitment to govern safety and health standards, thereby reducing costs involved with injuries and performing better than competitors do in operational efficiency and customer service.

This recommendation of management commitment to govern safety standards is consistent with suggestions by Landers and Maguire (2004). In the same study, the researchers investigated work injury programs in a large hotel in Las Vegas, and found a number of goals set by management to decrease the recordable injuries. Two goals, decrease lost workdays due to injuries and increase employee morale were accomplished. To elaborate, the study conducted with 50 housekeeping supervisors, 60 house persons, and 340 housekeepers analyzed the relevance of wellness programs for hotel housekeepers who faced workplace injuries. The effectiveness of classroom lectures about the correct postures and body mechanics for the tasks attended by supervisors was observed. As a recommendation, the supervisors were encouraged to remind the housekeepers of correct body postures during their daily tasks. These supervisors were supposed to identify “at risk” employees. They had a light duty program so that injured employees were involved in the work. The authors compared the total injury claims, direct medical expenses, total lost work time and total restricted duty for the year the program was implemented and the two years that followed. There was a significant decrease in claims, expenses and lost work time over next three years (Landers & Maguire, 2004). Overall, the main conclusions of the study by Landers and Maguire, (2004) suggest that the success of the program was due to a sense of increased managerial support, job satisfaction, and perception of care from the company.

The diagram below shows staff in a hotel performing housekeeping task:

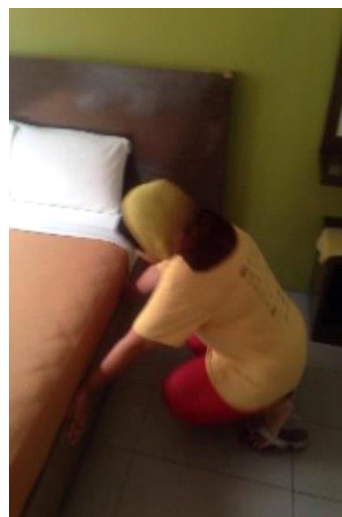


Figure 1: Making bed with back bend forward for more than 30°.



Figure 2: Making bed with contact stress and forceful exertion using hands for pushing bed.

Tools Used in Housekeeping Department

"Using hand and power tools" to perform physical work activities does not in itself mean that employees are exposed to ergonomic risk factors that put them at risk of injury. Rather, it is a shorthand way of alerting employers that there are aspects of tool design and use that need to be checked out to see whether ergonomic risk factors may be present. These include:

- i. Weight and size of tool
- ii. Tool handles and/or grips



Figure 3: Brooms and Wet/Damp mop with container.

Work Activities and their Ergonomics Risk Factors

1. Awkward postures, static postures, contact stress, vibration

The presence of any or all of these risk factors in a job, particularly jobs involving repetitive motion or forceful exertion, increases the force already required to perform job tasks and, therefore, increases the amount of time muscles need to recover from the exertions the task

requires. If the recovery time is not adequate, the presence of these risk factors hastens the onset of fatigue and the effects associated with overuse of muscles, joints and tendons especially attaching doors on the bathroom vanity assembly line, mobbing and scrubbing the floor.

2. Lifting and Lowering

In lifting and lowering, awkward posture is the risk factor that most often needs to be addressed. The awkward posture makes the muscles less efficient and results in higher forces. The higher forces lead to fatigue and inflammation.

- a. Kneeling and squatting to dress the guest room.
- b. Lifting bags of laundry from a wet floor

3. Pushing and Pulling

Pushing or pulling on an uneven, slippery, or sloped surface can result in a sudden increase in the force needed to move or stop an object. The increase in force alone can tear muscles or strain tendons enough to cause an injury. When the increase in force occurs when the body is in an awkward posture due to the surface, then a muscle or tendon strain is more likely, due to the inefficient position of the muscles.

- a. Pushing a laundry hamper across a wet floor
- b. Pushing a trolley tiled staircase
- c. Pushing a wheelchair through gravel
- d. Pushing a cart on a cracked concrete floor

4. Carrying

Carrying an object combines the static loading of the muscles with the loading caused by the awkward vertical position of the load. The combination of static and awkward postures greatly increases the fatigue on the muscles. Maintaining a stooped posture to carry a load places strain on the muscles of the back and shoulder as well as the spinal discs. Not only is the back supporting the weight of the object, but also the weight of the upper body. Carrying loads above shoulder height cannot be maintained for prolonged periods of time because the shoulder muscles will fatigue. The exception is when the weight of the load is rested on the skeletal system and the arms merely balance the weight (carrying objects on the head, carrying trays of food on the shoulder). There are times when housekeepers carry an object that cannot be rested against the body, so the arms are in a position that is similar to that of a long reach. This also happens when carrying a large box or pushing trolley on a staircase. When this happens the force risk factor is probably the most important, followed by the awkward and static posture risk factors.

- a. Carrying large, bulky boxes of machine parts where the worker is unable to carry the box with a horizontal hold
- b. Carrying a large piece of furniture down steps

Methodology

Research Design

The study is basically survey type of research, therefore survey research design was adopted through the use of well structured questionnaire and personal interview.

Area of the study

The study area is Umuahia located in Abia State. Abia State is one of the 36 states in Nigeria and is located in the south eastern geographical zone of Nigeria. The capital is Umuahia and the major commercial city is Aba. Abia State lies within latitude 5^o,25N and 7^o30'E of the Greenwich meridian. Abia State consists of three senatorial district and they are Abia South and Abia central.

Target Population

The target population comprised all hotels in Abia State, Nigeria.

Sampling

Simple random sampling was used. the first sampling involves the selection of ten (10) hotels and the second sampling involves the selected of one (1) manager and three (3) staff of the selected hotels making it the total of 40 which constitute the sample size of the study.

Data Collection

The primary data for the research was collected with the help of questionnaire as a tool for collecting data. The set of questionnaire comprising of five questions under various parameters was circulated to the housekeeping staff which includes the supervisors and the room attendants of the five star and four star hotels in Abia State. The questionnaire was comprising of three questions which were broadly classifies under the following heads:

- a. Awareness about Ergonomics amongst the Housekeeping staff of the hotel.
- b. Application of Ergonomics in Housekeeping department.
- c. Impact of ergonomics in Housekeeping department.

The first question was based on the awareness about the concept of Ergonomics amongst the Housekeeping staff of the hotel.

Findings

1. From the result conducted, 96 % of the Housekeeping staff is aware about the concept of ergonomics in Hotel Housekeeping.
2. It is noticed that there are very few about 4 % who are not aware about this concept.

The second question is about the study of Ergonomics based on its awareness. It is judged on five point rating scale ranging from most aware to least aware.

Findings

1. Maximum housekeeping staff is aware that the musculoskeletal disorders (MSD) are related to the housekeeping tasks like bed making, cleaning, etc.
2. Maximum housekeeping staff is aware that ergonomics is the practice which can be followed to reduce the musculoskeletal disorders (MSD).

3. About 48% of housekeeping staff is aware that ergonomics is a practice of designing equipments.
4. About 44 % of housekeeping staff is aware that Ergonomics is a means for adjusting the work environment as per the convenience of the cleaning staff.
5. About 62% of the housekeeping staff is aware that Ergonomics is used for improving the efficiency of the Housekeeping staff.

The third question is based on whether Ergonomics principles are practised at their workplace or not.

Findings

1. About 96 % of the Hotels surveyed follow the practice of ergonomics in Hotel Housekeeping.
2. It is noticed that there are very few about 4 % who do not follow the practices of ergonomics.

The fourth question is based on the application of ergonomics in Housekeeping department.

Findings

1. More than 50% of the hotels studied apply the principles of ergonomics while selecting the housekeeping equipment.
2. It is also observed that more than 50 % of the hotels train the housekeeping staff to reduce the impact of musculoskeletal disorders (MSD).
3. Some hotels about 46% consider ergonomics principles while designing the guest room furniture.
4. Most of the hotels, about 74 % consider the application of ergonomics principles while standardizing the operating procedure for the housekeeping tasks.
5. A few hotels consider this while allocating the work to the housekeeping staff.

The fifth question is based on the impact of practicing ergonomics principles at the housekeeping department.

Findings

1. It is observed that about 48% hotels agree that if ergonomics principles are applied in the hotel guest room, they provide comfort to the Guest room attendants.
2. It is also agreed by the hotels that, if ergonomics principles are applied while cleaning of the guest rooms, it improves the efficiency of the housekeeping staff.
3. About 60% of the hotels agree that if ergonomics principles are followed, they reduce the working time of the room attendants.
4. It is also observed that it reduces the fatigue while working in guest rooms.
5. This ultimately reduces the absenteeism amongst the housekeeping staff which may otherwise occur due to absence of ergonomics practices.

A few hotels believe that ergonomics could be one of the factors to reduce the turnover amongst

Conclusion and Recommendations

Conclusion

This study has confirmed that the housekeeper service workers are exposed to a variety of ergonomic risk factors and have a high risk of injury. In order to reduce injuries, both physical and psychosocial risk factors must be considered when developing system-wide strategies. These strategies should focus guest room cleaning procedures, trash/recycle and linen handling, mopping and bathroom cleaning and vacuuming and lifting/moving furniture.

Though hotels are aware about the physical injuries caused to their housekeeping staff for not following the ergonomics principles, less attention is given to the root cause. This ultimately causes issues like absentism, high turnover of the housekeeping staff, fatigue and low productivity. This way the inefficiency of the staff to perform as per the standards of the hotels reduces which may lead to further loss to an organization.

Proper intervention by the hotels should be taken by the hotels to ensure that the least problems are caused and that safe cleaning methods are followed to improve the efficiency of the staff.

Recommendations

Based on the above study based on Ergonomics in housekeeping following suggestions and recommendations can be made:

1. On the job training should be provided to the housekeeping staff to make them aware about the ergonomics practices.
2. The training should be based on proper use of equipment so as they do not exert the body.
3. Job rotation in other housekeeping areas is required to avoid overtime.
4. Backup staffing should be done to accommodate unplanned absences.
5. Frequent rest breaks to avoid the monotonous and heavy housekeeping job should be provided.
6. While considering selection of housekeeping equipments, automated equipments like floor cleaning should be selected to reduce physical risks associated with manual mopping.
7. No-touch cleaning systems and automatic scrubbers
8. an significantly reduce ergonomic risks and provide a higher level of cleaning, especially for larger areas.
9. For bathrooms cleaning consider using upright mops with long handles.
10. Consider adjustable mop handles with a curved & swiveling handle for larger areas that do not require automatic scrubbers.
11. Appropriate sized casters should be selected for easy rolling and maneuverability.
12. Toilet brushes (Johnny mops) with angled brushes and longer handles reduce bending and awkward wrist postures when cleaning toilets.
13. Ergonomists should be consulted before buying housekeeping cleaning equipment.

References

- Amell, T. & Kumar, S. (2001). Work-related musculoskeletal disorders: Design as a preventative strategy. *Journal of Occupational Rehabilitation*, 11(4), 255-265.
- Bearnard, B. P., Burt, S. E., Cole, L. L., Fairfield-Estill, C., Fine, L. J., Putz-Anderson, V., . . . Nelson, N. (1997). Musculoskeletal disorders and workplace factors. *National Institute of Occupational Safety and Health (NIOSH)*, 97-141.
- Bernhardt, A., Dresser, L., & Hatton, E. (2003). *Low-wage America: How employers are reshaping opportunity in the workplace*. Retrieved from <http://books.google.com/books>.
- Bongers, P. M., de Winter, C. R., Kompier, M. A., & Hildebrandt, V. H. (1993). Psychosocial factors at work and musculoskeletal disease. *Scandinavian Journal of Work and Environment Health*, 19, 297-312.
- Bourke, C. H., Harrell, C. S., & Neigh, G. N. (2012). Stress-induced sex differences: Adaptations mediated by the glucocorticoid receptor. *Hormones and Behavior*, 62(3), 210-218. doi:10.1016/j.yhbeh.2012.02.024
- Borg, V. & Kristensen, T. S. (2000). Social class and self-rated health: Can the gradient be explained by differences in life style or work environment? *Social Sciences Medicine*, (51), 1019-1030.
- Buchanan, S., Vossenas, P., Krause, N., Moriarty, J., Frumin, E., Shimek, J. A. M., . . . Punnett, L. (2010). Occupational injury disparities in the US hotel industry. *American Journal of Industrial Medicine*, 53(2), 116-125. doi: 10.1002/ajim.20724
- Burgel, B. J., White, M. C., Gillen, M., & Krause, N. (2010). Psychosocial work factors and shoulder pain in hotel room cleaners. *American Journal of Industrial Medicine*, 53(7), 743-756. doi: 10.1002/ajim.20832
- Costen, W. M., Cliath, A. G., & Woods, R. H. (2002). Where are the racial and ethnic minorities in hotel management? Exploring the relationship between race and position in hotels. *Journal of Human Resources in Hospitality & Tourism*, 1(2), 57-69.
- Cox, A., Grimshaw, D., Carroll, M., & McBride, A. (2008). Reshaping internal labour markets in the National Health Service: New prospects for pay and training for lower skilled service workers? *Human Resource Management Journal*, 18(4), 347-365. doi: 10.1111/j.1748-8583.2008.00073.x

- Davis, K. G., & Heaney, C. A. (2000). The relationship between psychosocial work characteristics and low back pain: Underlying methodological issues. *Clinical Biomechanics*, 15 (6), 389-406. [http://dx.doi.org/10.1016/S0268-0033\(99\)00101-1](http://dx.doi.org/10.1016/S0268-0033(99)00101-1)
- Deeney, C., & O'Sullivan, L. (2009). Work related psychosocial risks and musculoskeletal disorders: potential risk factors, causation and evaluation methods. *Work*, 34(2), 239-248. doi:10.3233/WOR-2009-0821
- Dineen, C. (2016). Florida sees record tourism numbers in 2015. *Orlando Sentinel* Retrieved from <http://www.orlandosentinel.com/business/consumer/os-florida-record-tourism-2015-20160218-story.html>
- Donovan, J. J., Dwight, S. A., & Schneider, D. (2014). The impact of applicant faking on selection measures, hiring decisions, and employee performance. *Journal of Business and Psychology*, 29(3), 479-493.
- Expantistan cost of living index. (2017). Cost of living in Honolulu, Hawaii, United States compared to Orlando, Florida, United States. Retrieved from: <https://www.expantistan.com/cost-of-living/comparison/orlando/honolulu>
- Faulkner, B., & Patiar, A. (1997). Workplace induced stress among operational staff in the hotel industry. *International Journal of Hospitality Management*, 16(1), 99-117.
- Frumin, E. (2006). Workload-related musculoskeletal disorders among hotel housekeepers: employer records reveal a growing national problem, *Unite Here*, 1-14.
- Friedman, L., & Forst, L. (2007). The impact of OSHA recordkeeping regulation changes on occupational injury and illness trends in the US: A time-series analysis. *Occupational & Environmental Medicine*, 64(7), 454-460. doi:10.1136/oem.2006.029322
- Greenhouse, S. (2006, April 21). Hotel rooms get plusher, adding to maids' injuries. *New York Times*, pp. 1-2.
- Howard, J., Chang, C. C., Schill, A. L., & Chosewood, L. C. (2016). NIOSH Response to the NIH Pathways to Prevention Workshop Recommendations. *Annals of Internal Medicine*, 165(4), 296-298. doi:10.7326/M16-0904
- Hsieh, Y. C. J., Apostolopoulos, Y., & Sönmez, S. (2013). The world at work: Hotel cleaners. *Occupational and Environmental Medicine*, 70(5), 360-364. doi:10.1136/oemed-2012-100986

- Hsu, S. Y., Ho, T. K., Tsai, J. J., & Wang, C. H. (2011). The evaluation mode of hotel housekeeping management. *African Journal of Business Management*, 5(34), 13249.
- Jones, T. J. (2007). *Professional management of housekeeping operations* (5th ed.). Hoboken, NJ: John Wiley & Sons.
- Kensbock, S., Jennings, G., Bailey, J., & Patiar, A. (2013). The lowest rung': Women room attendants' perceptions of five star hotels' operational hierarchies. *International Journal of Hospitality Management*, 35, 360-368.
- Krause, N., Dasinger, L. K., & Neuhauser, F. (1998). Modified work and return to work: A review of the literature. *Journal of Occupational Rehabilitation*, 8(2), 113-139. doi:10.1023/A:1023015622987
- Kerwin, D. M., & McCabe, K. (2011). Labor standards enforcement and low-wage immigrants: Creating an effective enforcement system. *Migration Policy Institute*, 1-68.
- Krause, N., Rugulies, R., & Maslach, C. (2010). Effort–reward imbalance at work and self