

Workload-Related Musculoskeletal Disorders among Hotel Housekeepers: Employer Records Reveal a Growing National Problem April 19, 2006

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Work-Related Musculoskeletal Disorders among Hotel Housekeepers: Employer Records Reveal a Growing National Problem

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Emerging evidence strongly implicates increasingly excessive workloads in the rising rates of musculoskeletal disorders among hotel housekeepers. A new analysis of hotel employer records of housekeeper injuries, combined with evidence from earlier surveys, reveal that housekeepers face disproportionate rates of workplace injury, with strains and sprains as the leading type of injury, accounting for nearly half of all housekeeper cases.

The contribution of working conditions to these cases is also evident. In our analysis, overexertion is the second leading cause of housekeeper injuries. In addition, recent detailed biomechanical evaluations of working conditions, the first ever reported in the United States, likewise implicate typical housekeeper tasks – especially bedmaking – as the leading contributors to the growth of housekeeper injuries.

Analysis of Employer Records

Data extracted from OSHA-mandated records of employee injuries maintained by the five biggest national companies during 1999 – 2005 at 87 unionized hotels in the US totaled 40,030 employees (as well as employment data from the same hotels). We identified 4,230 cases of injuries among housekeepers and a total of 14,719 cases among all employees. Given the 17.8% proportion of housekeepers among the total employees, these data revealed a 61% higher risk of injury to housekeepers. This excess risk increased from 47% in the period 1999-2001 to 71% in the period 2002 – 2005.

A further analysis of the same kind of injury data at a larger group of hotels (n=107) during the period 2000 – 2004 shows that “Strains/sprains” alone accounted for 44% of all injuries (n=3,272). While “contact with objects” was the leading cause, “overexertion” caused 27% of all injuries (n=1,605). Of great concern is the fact that the median rate of lost work time among the disabling cases in this population in 2002-2004 was 14 days away from work, more than double the rate reported by the US Bureau of Labor Statistics in its national sample of hotel employer records for workplace injury. In fact, hotels have one of the highest overall rates of workplace injury among major sectors within the entire service industry: 5.9% vs. 4.2%.

Among the contributing factors the widening use of new luxury beds and other amenities, coupled with reduced staffing, by the hotel companies. A new analysis using the “Lumbar Motion Monitor” demonstrates that the housekeeping job – including the bedmaking task -- has a 75% probability of yielding a high injury rate. This result is worse than that for any of the 20 manufacturing jobs which were also studied. Likewise, a new analysis of the bedmaking task on a luxury bed showed that bedmaking alone (apart from other room-cleaning tasks) exceeded the safe lifting limit recommended by the US National Institute of Occupational Safety and Health. During the same period (1999 - 2003), hotel companies have reduced by 45% the number of key employees (“housemen”) assigned to housekeeping tasks.

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Hotel Housekeeper Characteristics

Population:

- 1.3M hotel employees in U.S., 23% hotel housekeepers (Source: BLS)
- Hotel Housekeepers are overwhelmingly female
- Hotel Housekeepers are predominantly women of color and largely immigrant
- Hotel housekeeping work is low-wage work
2004 annual earnings = \$17,340 (below the poverty line)
(Source: BLS)

Hotel Worker Injury Rates:

**Injury/Illness Incidence Rates,
Hotel Workers vs. Service Sector, 2004**



BLS, 2005

- Worker injury/illness incidence rate is 40% higher than the rate for all service workers

Trends in Work Organization

Work organization: Quota System and Discipline

Recent trends with adverse impact on hotel housekeepers:

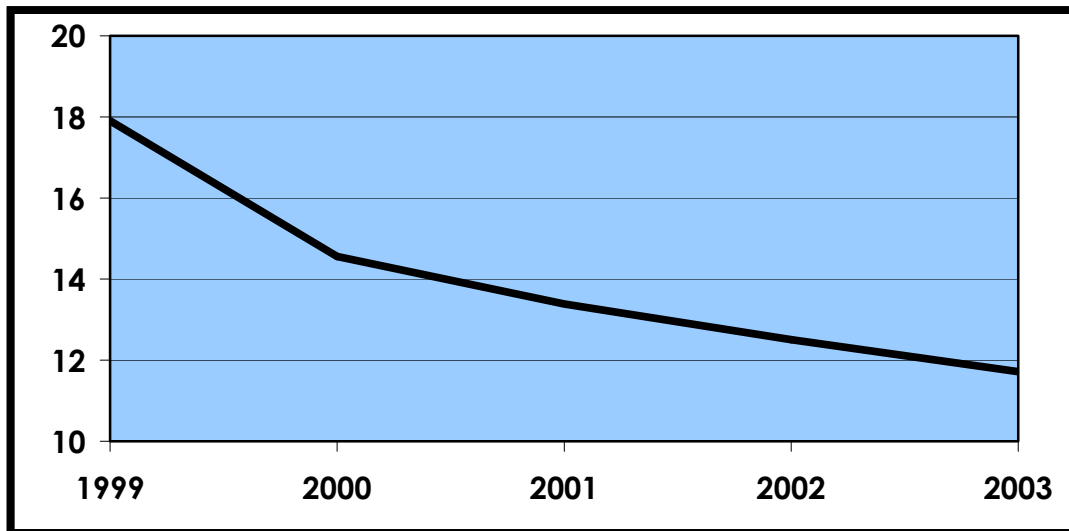
1. Understaffing
2. Increase in room amenities

Trend #1:

Understaffing: Housemen cuts mean housekeepers do more

Hotel housemen are critical to the work housekeepers do. They keep housekeepers supplied with clean linens and help with other heavy tasks. Yet, the number of housemen has been reduced significantly in recent years. Hotel managers have reassigned housemen's work to housekeepers *in addition to* their normal duties.

Housemen per 100 housekeepers, 1999 to 2003



- Between 1999 and 2003, the number of housemen has been cut by 33%.

Data Coverage and Sources: Analysis based on data from 9 unionized hotels with average annual total employment of 6,600.

Trends in Work Organization (Continued)

Trend #2: New and upgraded room amenities

Hotels have upgraded existing and added new amenities like coffeepots, robes, slippers and other items. Most prominent among these changes are the **introduction of luxury beds**, with heavy mattresses, thick duvets, triple sheeting and extra pillows.

Luxury beds exceed NIOSH's safe lifting index:

NIOSH JOB ANALYSIS WORKSHEET												
Department		Housekeeping				Job Description						
Job Title		Housekeeper				Making a king bed						
Analyst		G. Orr										
Date		11/11/2004										
STEP 1. Measure and record task variables												
Object Weight (lbs)		Hand Location (in)				Vertical Distance (in)	Asymmetric Angle (deg)		Freq. Rate (Lifts/Min)	Duration (hours)	Object Coupling	
L(AVG)	L(MAX)	Origin		Destination		D	Origin	Destination	F		C	
32	35	H	V	H	V	3	A	A	0.2	8	poor	
		14	15	14	18		0	0				
STEP 2. Multipliers – Recommended Weight Limits												
RWL =		LC x	HM x	VM x	DM x	AM x	FM x	CM				
ORIGIN	RWL (lbs)	=	51	0.71	0.89	1.00	1.00	0.85	0.90	=>	24.73	
DESTINATION	RWL (lbs)	=	51	0.71	0.91	1.00	1.00	0.85	0.90	=>	25.36	
STEP 3. LIFTING INDEX (L.I.)												
ORIGIN	L.I.	=	Object Weight (L)		=	32	=		1.29			
			RWL		=	24.73						
DESTINATION	L.I.	=	Object Weight (L)		=	32	=		1.26			
			RWL		=	25.36						

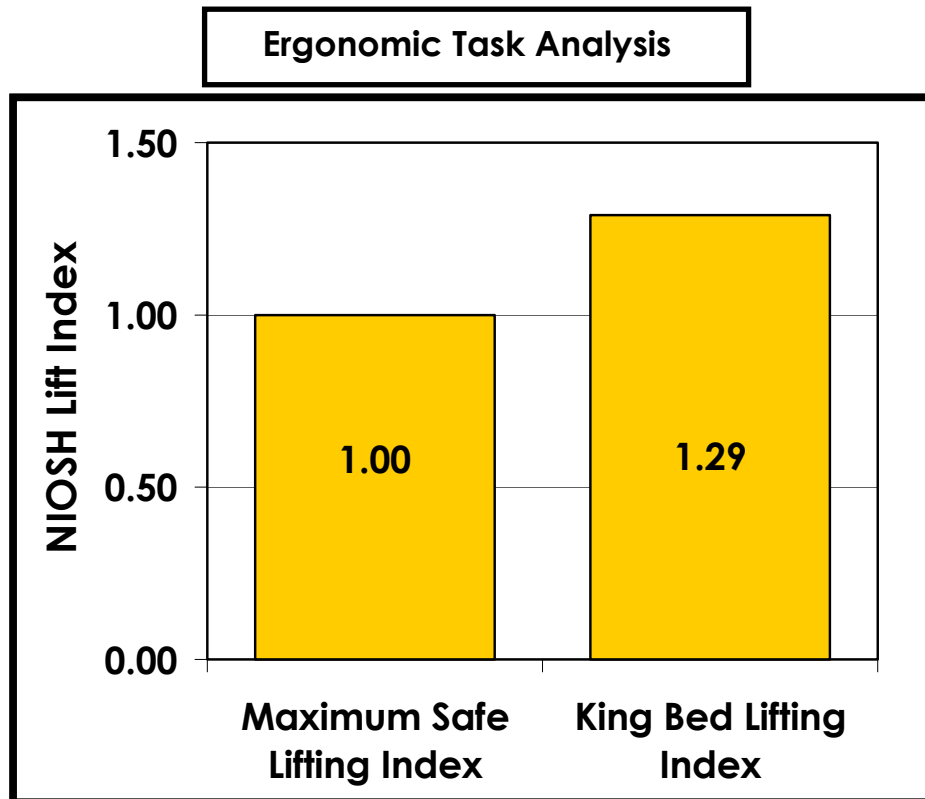
[Summary of findings on next page]

Trends in Work Organization (Continued)

Trend #2 (continued): New and upgraded room amenities

Findings:

- Making a king bed scored 1.29 on the NIOSH lifting index, indicating increased risk for back injuries. A value of 1.0 or less on the index indicates a job that is safe for about 90% of the population.



- The two leading factors contributed the most to the ergonomic risk factors were the weight of the king mattress and the low position of the mattress, 14 inches off the ground.

Data coverage and sources: This ergonomic task analysis was performed by Gary Orr, a certified ergonomist, after observing housekeepers perform the bedmaking task. See reference #4.

Employer Records Analysis #1: Hotel Housekeeper Injury Incidence Rates

Injury Incidence Rates = proportion of hotel housekeepers that suffer a documented workplace injury

Hotel housekeeper employment and injuries, 1999-2005			
	Avg. annual employment ¹ (No.)	Avg. annual injuries ² (No.)	Avg. injury rate (%)
All hotel employees	40,130	2,582	6.4%
Hotel housekeepers	7,149	742	10.4%
Non-housekeepers	32,981	1,840	5.6%

¹ Average annual employment calculated assuming bargaining unit members compose 80% of total hotel employment in unionized establishments.

² Not all hotels provided OSHA logs for each year of the 7-year period; logs were provided, on average, for 5.7 years. Therefore, average annual injuries are computed by dividing the total number of injuries by 5.7.

Findings:

- On average, hotel workers experienced a documented injury rate of 6.4 per 100 workers.
- Hotel housekeepers faced a significantly greater injury rate of 10.4%, which is over 86% higher than the injury rate experienced by non-housekeepers (5.6%).

Data Coverage and Sources: Analysis based on data from 87 unionized hotels operated by Hilton, Hyatt, Intercontinental, Marriott and Starwood with average annual bargaining unit employment of 32,104 and calculated average annual total employment of 40,130. Injury data from OSHA-required employer logs that record worker-reported workplace injuries and illnesses. Employment data from employer-responses to union information requests, quarterly reports and other employer-provided documents.

Employer Records Analysis #2: Hotel Housekeeper Proportional Morbidity Ratio

Proportional Morbidity Ratio (PMR) = Percent by which injury risk is greater for hotel housekeepers than all hotel workers

Proportions of hotel housekeeping employment and injuries, 1999-2005				
	Proportion of hotel employment	Proportion of injuries		
		1999-2005	1999-2001	2002-2005
Hotel housekeepers	17.8%	28.7%	26.2%	30.4%
Non-housekeepers	82.2%	71.3%	73.8%	69.6%
Percent by which injury risk is greater for hotel housekeepers than all hotel employees ^a		61.4%	47.1%	70.8%

^a "Percent by which injury risk is greater for hotel housekeepers than all hotel workers" is computed:

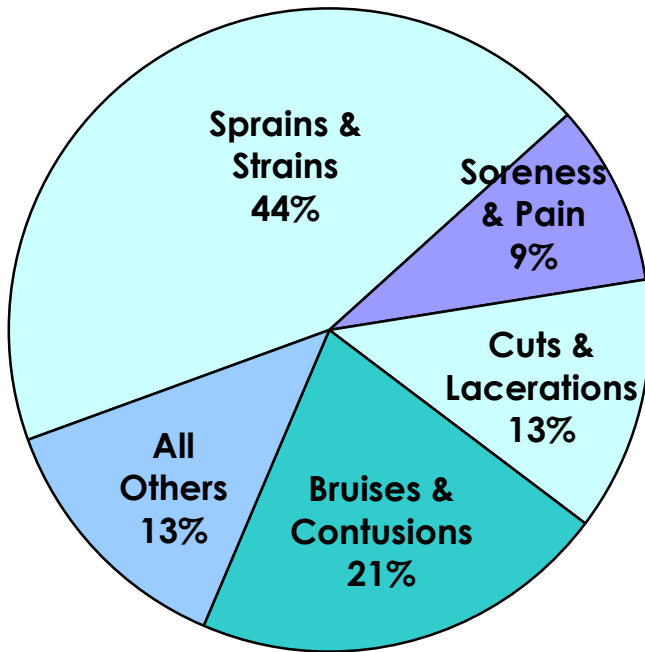
$$\frac{[\% \text{ injuries experienced by housekeepers} - \% \text{ housekeepers of total employment}]}{[\% \text{ housekeepers of total employment}]}$$

Findings:

- Between 1999 and 2005, housekeepers composed less than one fifth of hotel employment (17.8%), yet suffered over one quarter (28.7%) of all injuries.
- The PMR for the 1999-2005 period = 61.4%; Housekeepers faced a 61.4% higher risk of injury compared to all hotel workers.
- Hotel rooms have become more hazardous places to work in recent years; the PMR is 50% greater in the 2002-2005 period (70.8%) than in the 1999-2001 period (47.1%).

Data Coverage and Sources: Same as Analysis #1 on previous page.

Employer Records Analysis #3: Injury Distribution



Nature of Injury

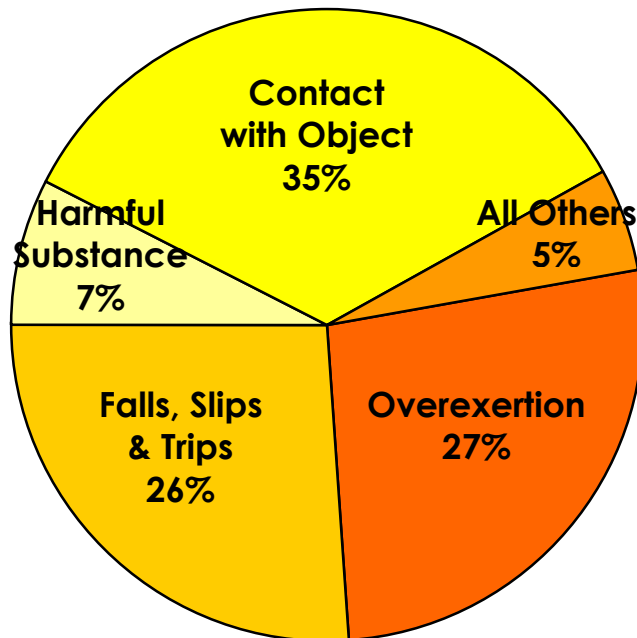
Sprains & strains are the most common types of hotel housekeeper injuries, accounting for 44%.

N=3,272

Event/Exposure

Contact with objects (35%) and **overexertion** (27%) are the most common causes of hotel housekeeping injuries.

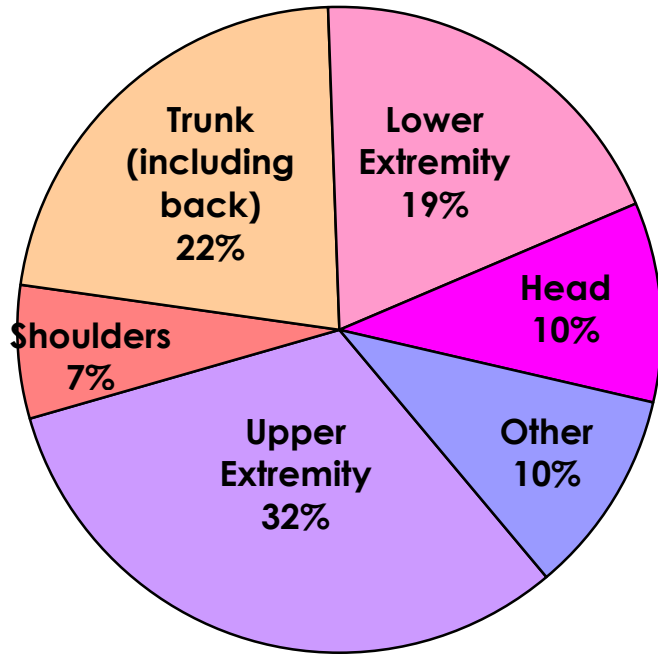
N=1,605



Data Coverage and Sources:

Analyses based on 3,716 employee-reported hotel housekeeper injury cases in the 2000-2004 period from 102 union hotels operated by Hilton, Hyatt, Intercontinental, Marriott and Starwood.

Employer Records Analysis #3 (continued): Injury Distribution



Injured Body Part

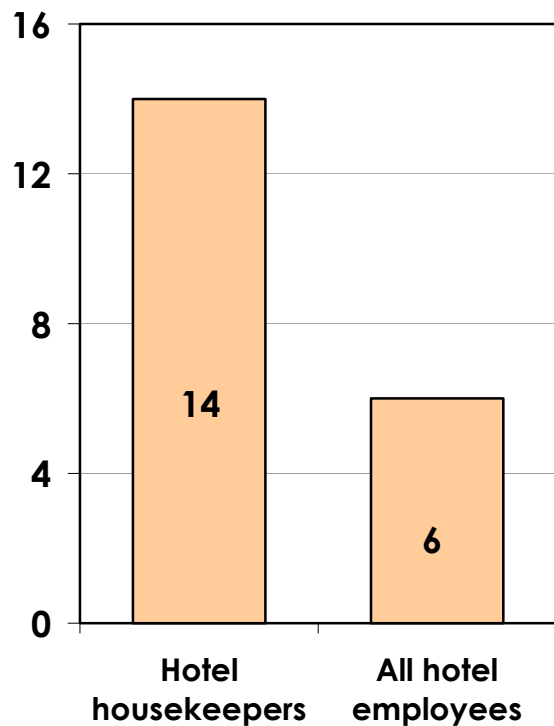
Workplace injuries of the **upper extremities** (32%) and the **trunk (including back)** (22%) are the most common among hotel housekeepers.

N=3,564

Median Days Away from Work

Of the hotel housekeeper lost time cases, the median number of days away from work is 14, **twice the median for all hotel employees nationally**. (BLS, 2004)

Housekeepers: N=1,395 (38% of the total cases are lost time cases) in 2002-2004 period.



Pain Prevalence

Surveys of hotel housekeepers reveal high proportions suffer severe workplace pain.

Pain Survey Results, UNITE HERE and Published Studies			
	UNITE HERE	Krause ('05) & Scherzer ('05)	Lee ('02)
	Boston, L.A. & Toronto	Las Vegas	San Francisco
Number of respondents	622	941	258
Have work-related pain	91%	78%	77%
Take pain medication	66%*	84%	n.a.
Visit doctor for pain	67%	62%	73%
Did not report injury to supervisor	55%**	67%	50%
Body parts most commonly affected:	lower back, shoulders	lower & upper back	n.a.

n.a. Not included in Krause's San Francisco study
 * The survey administered in L.A. did not include this question; N = 459
 ** Toronto responses excluded due to differences in workers compensation systems between the US and Ontario, Canada; N = 357

Findings:

- A high percentage of hotel housekeepers experience workplace pain, ranging from 77% to 91%.
- Workplace pain is so severe that over 65% of hotel housekeepers who reported workplace pain took pain medication and over 60% visited a doctor.
- More than 50% of hotel housekeepers who reported workplace pain DID NOT report their injury to supervisors, indicating significant underestimation.
- The areas of the body where the pain is most common is consistent with the ergonomic hazards related to hotel housekeeping tasks and with recognized musculoskeletal injuries associated with such tasks.

Data coverage and sources: Hotel housekeepers were surveyed as part of two studies (see references) and by UNITE HERE locals in North America. The above results are from worker interviews performed in English, Chinese and Spanish. The housekeepers were initially asked if they had any pain or discomfort associated with their work. If yes, they answered a series of questions about their pain, job tasks, and whether they reported their injury to management. See references #1, #2 & #5.

Workers Compensation Costs

Hotel housekeeper injuries create substantial “direct” costs for hotel employers.

Total cost of all injury claims = \$4,735,000 (cost thru 12/31/05)

Avg. Cost per claim = \$6,280

Data Coverage and Sources: Analysis based on 754 Workers Compensation cases (2002-2004) from employer records of 14 unionized hotels with total employment of over 9,000 workers.

Lumbar Motion Monitor: Analysis of Hotel Housekeeping Tasks

Methodology:

- This Lumbar Motion Monitor (LMM) analysis identifies jobs with high and low incidence of low back injuries and assesses the probability that a job will be in the “high” risk group. “High” risk is defined as 12 or more new low back injuries per 200,000 hours of exposure.
- The LMM is a lightweight exoskeleton of the spine and measures the position, velocity, and acceleration in all three planes of the body.
- The LMM results are expressed as a percentage, e.g. a score of 50% means that the job has a 50% chance of being in the high risk category of low back disorders.



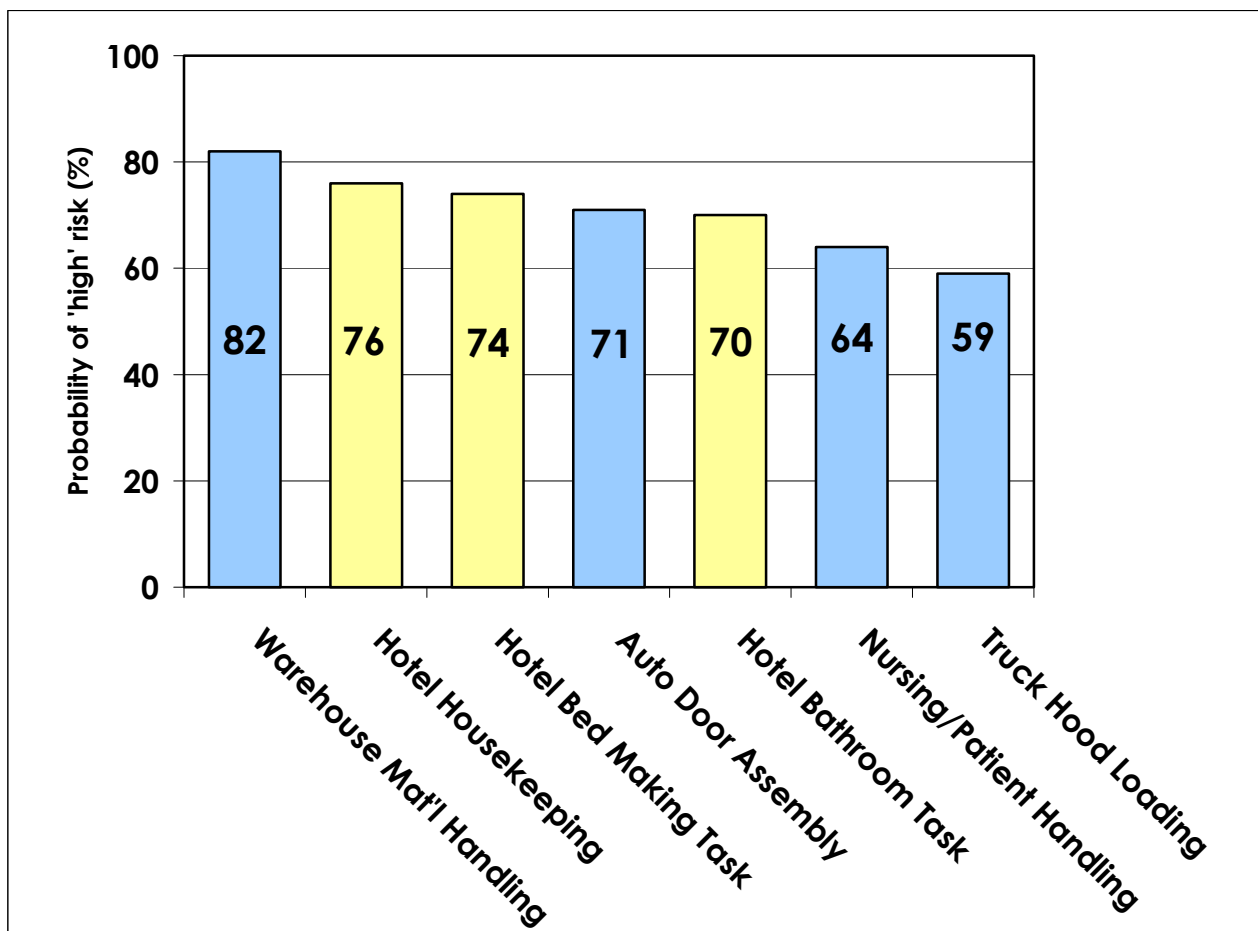
Photo: Earl Dotter

Lumbar Motion Monitor (Continued)

Findings:

- The overall hotel housekeeping job has a very high likelihood (76%) of high risk of low back injuries. This exceeds the risks associated with all 20 manufacturing jobs previously studied as well as nursing/patient handling. Only some warehousing jobs had a higher risk.

Probability of High Risk of Lower Back Disorders: Hotel Housekeeping vs. Selected Other Occupations



- Certain tasks of the housekeeper's job are associated with particularly high risk:
 - Bed making (74%)
 - Bathroom Cleaning (70%)

Data coverage and sources: The LMM analyses were performed by researchers at the Institute for Ergonomics at Ohio State University (OSU) under the direction of Dr. William Marras, who developed and patented the methodology.

Recommendations

Hotel employers must improve the organization of hotel housekeeping work:

- Humane workloads & reasonable quotas
- Comprehensive re-design (i.e. beds, carts)
- Ergonomically designed tools (i.e. long handles)
- Increased staffing
- Enforced break time
- Joint labor/management health & safety training for supervisors and employees

Increased support for studies on hotel housekeeper hazards and interventions, by NIOSH, industry and academia is needed.

References

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 2. Lee PT, Krause N. The impact of a worker health study on working conditions. *Journal of Public Health Policy*. 2002; 23 (3): 268-85.
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 5. Scherzer, T, Rugulies, R, Krause, N. Work-related pain and injury and barriers to workers' compensation among Las Vegas hotel room cleaners. *American Journal of Public Health*. 2005; 95 (3): 483-488.
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