

## Assessment of workload and occupational health hazards of hospitality industry worker

GAYATRI MOHARANA<sup>1</sup>, DEEPA VINAY and DIVYA SINGH

<sup>1</sup>DRWA, Bhaveneshwar (Orissa)

Department of Family Resource Management, College of Home Science, G. B. Pant University of Agriculture and Technology, Pantnagar - 263 145 (U. S. Nagar, Uttarakhand)

**ABSTRACT :** A study was conducted for ergonomic assessment of Hotel workers (n=78) working in Three Star Hotel. The mean heart rate was found to be 126.68, 123.45 and 137.12 (beat/min) respectively in Kitchen, Housekeeping and Laundry department. The heart rate was found within allowable limits. The average energy expenditure rate of the workers of different departments i.e. Kitchen, Housekeeping and laundry was 12.59, 12.33 and 13.27 (kJ/min) respectively. The results of the study implicated that the laundry workers were doing very heavy work followed by the kitchen and housekeeping workers because the energy expenditure, total cardiac cost of work and physiological cost of work among laundry workers were very high as compared to the other department of the hotel which affects their health and in turn leads to occupational health hazards.

**Key words:** Hospitality industry, occupational health hazard, physiological cost of work, energy expenditure

The hospitality industry is a part of larger enterprise known as the travel and tourism industry. Hospitality is defined as “The friendly reception and treatment of strangers”. Hospitality means entertaining guest with courtesy and warmth and is also an industry made up of business that provide lodging, food and other services to travelers.

As the numbers of hotels grooming in the tourist places, the number of tourists also increase day by day. This also creates opportunities for young people to engage themselves in the hotel industries. The values of goods and services produced by hotel and restaurant industry are very high and they contribute to country's gross domestic product as well as economy. The people of hotel industry are engaged in different jobs like housekeeping, cooking, catering, laundering and managing the front office etc. In the fast-paced environment of hotels and restaurants, a common attitude is that accidents are inevitable and a part of doing business. But injuries mean losses i.e. loss of money,

loss of time and loss of productivity. In different sections of hotel like kitchen, laundry and housekeeping the workers perform varied types of job which are physically demanding and may cause occupational health hazards such as back pain or pain in upper extremities like upper limbs, neck and shoulders. The other aches arising from manual handling injuries and considered as most common type of occupational health hazards are lifting, carrying heavy items or pushing and pulling the object from one place to other. Besides, these forceful or repetitive activities and poor posture can be linked to upper limb injuries. These ultimately affect the health of the workers and lead to occupational health hazards.

Therefore, a study was carried out to find out the physiological and biomechanical parameters of the workers of laundry, housekeeping and food and beverage areas. Influencing health status of the worker due to present occupation. Ergonomic cost of selected drudgery prone activities was also calculated by measuring the physiological parameters of selected activities.

## MATERIALS AND METHODS

Out of six departments available in hotel, four departments were chosen purposively for the study which included front office, housekeeping, kitchen and laundry. From these departments seventy eight respondents i.e. thirty eight respondents from kitchen, twenty six respondents from housekeeping, six from the front office and eight from the laundry were selected through purposive random sampling. Energy expenditure and grip fatigue for the various hotel activities were measured.

### Physiological Cost of Work

Circulatory stress was evaluated from the cardiac cost of work and cardiac cost of recovery. The cardiac cost of recovery is the total number of heart beats above the resting level occurring between the end of the work and return to the resting state (Saha, 1979).

### Grip Strength

Stress of the muscles of hands during performance of the activities can be recorded with the help of grip dynamometer (Harpender- German).

### Visual Analogue Scales (VAS)

Postural discomfort questionnaire based on Visual Analogue Scales (VAS) was used to measure subjective qualitative judgments of different staffs of laundry, front office, housekeeping and kitchen workers regarding postural discomfort at various times throughout the day.

The questionnaire comprised of a simple body diagram divided into 10 regions. Body part discomfort scale adopted from Corlett and Bishop (1976) and VAS scale developed by Legg and Mohanti (1985) was used.

## RESULTS AND DISCUSSION

It was found that both female and male workers were working in housekeeping and front office departments whereas, kitchen and laundry sections were male exclusive (Table 1). The mean age of the respondents working in kitchen, housekeeping, laundry and front office were found to be 26-35 years, 25-67 years, 25-35 years and 27-38 years respectively. The mean height and weight of females working in housekeeping department were found to be more as compared to the females working in front office. However, the height and weight of male workers working in front office were found more as compared to the male workers working in other departments.

Data pertaining to (Table 2) physiological parameters of laundry, housekeeping, kitchen work should the average working heart rate and peak heart rate which was found maximum for laundering activities followed by kitchen and housekeeping activities. Similar results were obtained for the average energy expenditure. Average total cardiac cost of work (beats) was 1277.50 for laundering activities followed by kitchen activity (1120.56 beats) and housekeeping activity (1093.37). Similar results were also obtained for the average of physiological cost of work. It was found to be 50.73 beats/

**Table 1: Personal profile of the respondents**

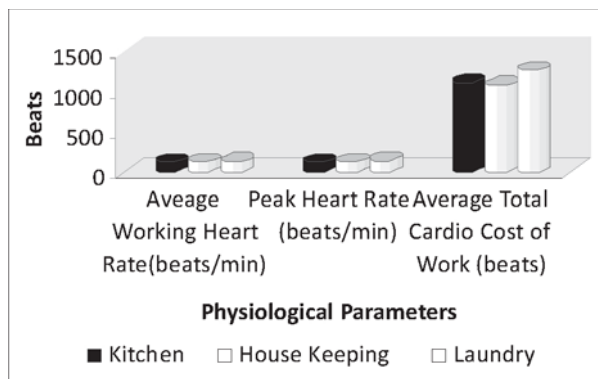
|                         | Kitchen (n=38) |       | House Keeping (n=26) |       |        |       | Laundry (n=8) |       | Front Office (n=6) |      |        |       |
|-------------------------|----------------|-------|----------------------|-------|--------|-------|---------------|-------|--------------------|------|--------|-------|
|                         | Male           |       | Female               |       | Male   |       | Male          |       | Female             |      | male   |       |
|                         | Mean           | SD    | Mean                 | SD    | Mean   | SD    | Mean          | SD    | Mean               | SD   | Mean   | SD    |
| Age (yrs.)              | 26.35          | 6.99  | 25.67                | 4.73  | 25.35  | 4.01  | 27.38         | 9.20  | 20.33              | 0.58 | 24.00  | 2.00  |
| Height (cm)             | 160.14         | 7.48  | 160.00               | 4.00  | 160.35 | 9.26  | 161.25        | 7.61  | 156.00             | 5.29 | 166.33 | 8.62  |
| Weight (kg)             | 63.84          | 9.96  | 59.00                | 9.00  | 61.30  | 11.39 | 57.88         | 8.54  | 47.67              | 2.52 | 66.00  | 13.75 |
| Job Experience (months) | 17.63          | 92.76 | 41.33                | 30.35 | 34.26  | 40.65 | 12.88         | 11.00 | 4.67               | 4.62 | 22.00  | 14.14 |

**Table 2: Physiological workload of different activities performed by hotel workers**

| Sl. No. | Physiological parameters                       | Kitchen | House keeping | Laundry |
|---------|--|---------|---------------|---------|
| 1.      | Average working heart rate (beats/min)         | 127.68  | 123.45        | 137.12  |
| 2.      | Average energy expenditure (kj/min)            | 12.59   | 12.33         | 13.27   |
| 3.      | Peak heart rate (beats/min)                    | 134.00  | 131.00        | 146.00  |
| 4.      | Peak energy expenditure (kj/min)               | 12.76   | 12.93         | 14.40   |
| 5.      | Average TCCW (beats)                           | 1120.56 | 1093.37       | 1277.51 |
| 6.      | Average physiological cost of work (beats/min) | 48.15   | 47.70         | 50.73   |

**Table 3: Percentage change in grip strength of the subjects, before, during and after activities**

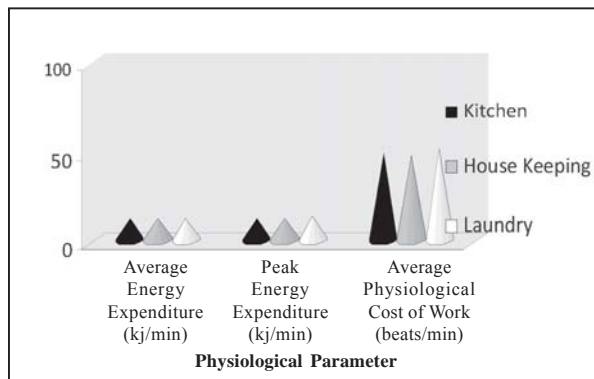
| Different area | Rest  |       | During work |       | After work |       | % change in grip strength |       |
|----------------|-------|-------|-------------|-------|------------|-------|---------------------------|-------|
|                | Left  | Right | Left        | Right | Left       | Right | Left                      | Right |
| Laundry        | 34.38 | 33.38 | 32.87       | 31.75 | 33.62      | 31.12 | 4.39                      | 4.88  |
| Kitchen        | 39.29 | 38.26 | 36.42       | 35.82 | 37.92      | 37.05 | 7.03                      | 6.32  |
| House Keeping  | 38.57 | 39.42 | 36.23       | 36.28 | 37.31      | 38.04 | 6.06                      | 7.53  |



**Fig.1: Average working heart rate (beats/min), Peak Heart Rate (beats/min) and Average TCCW (beats) of respondents of different departments while performing the activities**

min for laundry, 48.15 beats/min for kitchen and 47.70 beats/ min for the house keeping activities as performed by the hotel workers. These findings are similar to the findings of John and Martin (1993).

It was found that the average working heart rate, peak heart rate and average energy expenditure was maximum for laundering activities followed by kitchen and housekeeping activities. Sharma and Sharma (1989) studied the physiological work load of the women performing the task of fetching water from near water resources. Heart rate responses during the activity of fetching of water and the estimated energy expenditure were recorded. The average physiological cost of work was highest during the back ward journey (HR, 111.07 and E.E 8.9 kj/min and HR, 103.97 and E.E. 7.81 kJ/min for the first and second age group respectively. The average heart rate, energy expenditure of the respondents of 21-30 years was more as compared to that of the respondents of 31-40 years of age group during onward journey and drawing water. In backward journey it was more or less same. Average heart rate and energy expenditure of the respondents of 31-40 years of age was more as compared to the respondents of 21-30 years while fetching water in complete cycle.



**Fig.2: Average Energy Expenditure (kj/min), Peak Energy Expenditure (kj/min) and Average PCW (beats/min) of respondents of different departments while performing the activities**

The grip strength of the selected respondents was measured with the help of grip dynamometer, while performing the tasks.

The grip strength of both left and right hand was measured at rest, for working period and after the work. Percentage change in grip strength was also calculated.

Table 3 depicts the percentage change in grip strength of the subjects, before, during and after activities performed by the laundry, kitchen and housekeeping department. The findings show that the percentage change in grip strength of the respondents of laundry was less as compared to the activities performed by the workers of housekeeping and kitchen. The percentage change in grip strength of kitchen workers was more as compared to the respondents of housekeeping department this shows the grip fatigue among the workers of various departments. Sharma and Sharma (1999) studied on the weeding activities performed by the farm women. The results showed that average muscular grip strength was higher during rest(3.60 kg) compared to work(3.30 kg) and after work (2.60 kg) with the percentage change in grip strength as 8.33 in 21 to 30 years age group which also match with the findings of the present study.

### Occupational Health Hazards

The Visual Analogue Scales (VAS scale) was administered to the workers of the four departments and the activities of whole day was assessed. The awkward posture adopted by the workers at work place was the main reason of pain and discomfort in body parts. Kitchen workers reported severe pain and discomfort in legs whereas discomfort in buttock, thighs, and mid back was comparatively low. Among the housekeeping workers highest mean value of discomfort was reported for shoulder (4.96) followed by with upper back (4.38), lower arm (4.26) and leg (4.11). However, the mean value of pain was highest in legs (6.25), followed by shoulder (5.12), upper back (4.5), mid back (4.25) and neck (3.87) among laundry workers. The front office workers reported highest discomfort in neck (5.87), shoulder (5.12), upper back (4.5), lower back (4.5) and mid back (4.12). The workers are doing the same job throughout the year. All the workers reported that they had to work continuously for a longer period in different postures which produce pain in different body parts. These kinds of pain were responsible for development of musculoskeletal disorders. The environmental factors like temperature, humidity and noise affect their working activities and also affect the physical and mental health of the worker. Moreover the activities performed by these workers were very painful to their body and hence required immediate attention to reduce the occupational health hazards.

### CONCLUSION

This study explores the physical stress and strain in the working postures of the workers of the hotel working in the kitchen, housekeeping and laundry. They were doing the same job throughout the year without any rotations, and they were fulltime employed for the assigned work. All the workers reported that they had to work continuously for a long period in different postures which produce pain in different body parts. This study revealed that the workers of different departments of the

hotel were doing very heavy task with awkward postures and repetitive motion. Their physiological cost of work was very high as they spent more energy while doing the tasks. The environmental factors like temperature, humidity, noise affect their working activities and also affect the physical and mental health of the worker since the worker are the real stars behind the stars. Therefore, to abide the chances of occupational health hazards immediate attention of ergonomists is required.

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