



Comparison between Existing Furniture for Relaxation and Ergonomically Designed Relaxing Chair among Restaurant Workers

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Abstract

Kitchen in the restaurant is the place where the job of preparing and serving meals get done, where the workers have to do their working continuously for long hours without taking rest as they have direct contact with clients throughout the day. This is important because of the number of tasks carried out in restaurant kitchen in traditionally a small area and becoming even smaller since the cost of space is going higher, and possibly as consequences of all these factors, the fact that the restaurant kitchen has become the site of the majority of the accidents because of the frequent work force. Ergonomically designed furniture can reduce pain and injury, increase productivity, improve morale and decrease complaints. chair design considers intended usage, ergonomics how comfortable it is for the occupant, as well as non ergonomic functional requirements such as size, stack ability, fold ability, weight, durability, stain resistance and artistic design. Therefore, the study was undertaken to compare between the existing furniture for relaxation and ergonomically designed relaxing chair among restaurant workers. For the present study 120 workers were selected from the four south Indian restaurant i.e. Sri nidhi sagar, Raaga the family restaurant, Tamarind and Inchara the family restaurant, Bangalore city, Karnataka State. Descriptive cum experimental research design was used for the present study. Purposive sampling procedure was followed to select the sample and data was gathered by interview method. It was found that the restaurant workers faced lot of problems due to non availability of relaxing chair at their work unit. Hence due to prolong standing posture and, continuous working hours and absence of relaxing of body they suffered with arthritis problem, lower and upper back problem, headache, swelling on ankles, stiffness in leg and hand joints, numbness in body, reduced grip strength, limiting movement of fingers etc.

Key words: Restaurant workers, Anthropometric measurement, Relaxing chair, Ergonomics.

I. Introduction

The hotel, restaurant and catering sector covers a wide range of different businesses, including hotels, pubs, and restaurants, contract caterers in various industrial and commercial premises, fast foods, cafes and bistros. The complexity of this sector makes it difficult to present an exhaustive view of the situation. Much attention goes toward working in kitchen. The restaurant and catering sectors employ more than 7.8 million people in India and is characterized by high job demands and high physical workloads. As the objective of the ergonomics are to enhance performance, increase safety and increase user satisfaction, the problem occurred to the existing restaurant chair which the workers are using for rest should be analysed and identified first. Thus, it is appropriate to regard the restaurant kitchen, and the work performed by the restaurant workers. The workers, working in the restaurants must withstand the pressure, string of working for long hours, suffering from high blood pressure due to prolong standing posture, lifting heavy pots and kettles and working near hot oven and grills. So there is a need to take care of that kind of workers. There are more chances of injuries and disorders if the proper working posture is not adopted. If the required rest is not taken while working, musculoskeletal disorders can be the result. Musculoskeletal disorders are not usually caused by acute trauma, but occur slowly over a time due to repetitive injuries to the soft tissues such as muscles, tendons, ligaments, joints, cartilage and nervous system. This can happen to anyone from restaurant workers to athlete, office workers; industrial employees' etc. if there is no proper place to

rest in restaurants damage or defect can happen to any parts of the worker's body especially the thoracic area which is at the back part of the worker. This could happen if the restaurant worker does not practice the right position during work. This pain can be a permanent pain if there is no action or research taken to help restaurant workers in increasing the level of comfort while working. Those actions can be summarized to be the change in the way of seating or in other words the design of chair used by the restaurant workers.

A product may be ergonomically designed for a specific application. The product selected must be matched the characteristics of the required operation and the characteristics' of the worker who use the products. Some products are designed to specifically reduce risk factors. The goal of designing chair is the flexibility to accommodate the worker so that restaurant worker may interface effectively with relaxing chair. The main aim of designing the relaxing chair for restaurant workers is to facilitate task performance, minimize fatigue and injuries by fitting the relaxing chair to the body size, strength and range of motion of the user. Intended usage determines the desired seating position. Most of the chair in the market do not applied the real concept of ergonomics. There are many studies which have been done in designing chair with ergonomic approach, but yet the suitable chair for the application of the restaurant worker is still not being considered. An ergonomically designed relaxing chair for the restaurant workers should be created to reduce the pain faced by them and also to consider the comfort of them. Aware of this problem, this study is being conducted in order to enhance the productivity of the restaurant workers and reduce the possibility of musculoskeletal disorders.

Objectives:

1. To compare between existing furniture for relaxation and ergonomically designed relaxing chair among restaurant workers.

Limitation:

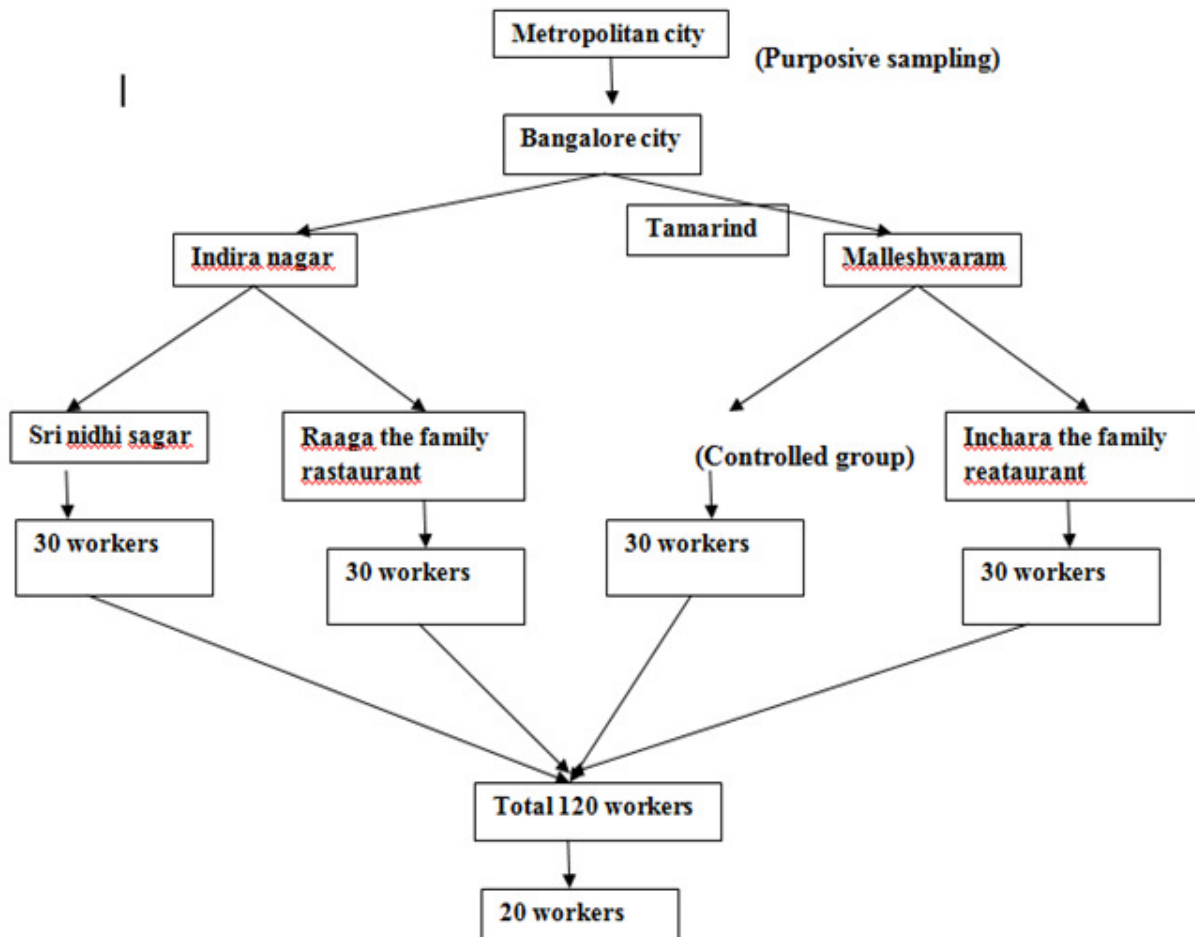
1. The study was limited to the restaurant workers only.
2. The study was limited to the Bangalore city only.
3. The study was limited to the family restaurant only.

Assumption:

1. The awareness level of the restaurant workers regarding ergonomic hazards was very poor.

II. Methodology

Research methodology is needed because it facilitates the smooth sailing of various research operations in a systematic manner. In this study both the descriptive-cum-experimental research design was planned. The data was collected by interviewing the respondents. For anthropometric measurement data table and worksheet were also prepared. For selection of study area, purposive sampling and for respondent selection simple random sampling design without replacement was used. Four restaurants were purposively selected for the present study namely- Sri Nidhi Sagar, Raaga (the family restaurant), Tamarind and Inchara (the family restaurant), Bangalore city, Karnataka. An exhaustive list of restaurant workers was taken from their respective department. 120 restaurant workers performing group of activities as preparation of food, cooking, serving and dish washing were selected. From each category 20 workers were selected for the experimental data thus making 120 samples for survey and 20 samples for controlled group.



The descriptive data from 120 workers was collected by using the pre coded interview –cum- record schedule through personal contact from the key informants.

III. Result and Discussion:

The worker who are working in prolong standing posture needs relaxation for few minutes so that they can feel comfortable and make their work more efficient, faster and less fatiguing.

Comparison between existing furniture and for relaxation and ergonomically designed relaxing chair:

When the dimension of existing used furniture for relaxation and ergonomically sound relaxing chair were calculated for comparison then it was found that there was a measurable difference in dimension and other features where it was calculated statistically, the significant difference was found in all dimension of existing and ergonomically designed relaxing chair.

Measurement	Dimension of ergonomically designed relaxing chair(c.m.)	Dimension of existing furniture (c.m.)
Sitting height	96.5 (95 th percentile)	68.3
Sitting eye level height	85(95 th percentile)	52
Buttock popliteal height	54.86 (95 th percentile)	51.3
Buttock to knee height	64.77 (95 th percentile)	59.1
Sitting popliteal height	49(95 th percentile)	43.4
Sitting knee height	59.4 (95 th percentile)	55.2

Thigh clearance	17.5 (95 th percentile)	13.3
Waist depth	31.24 (95 th percentile)	23
Elbow rest height	29 (95 th percentile)	-
Sitting hip breadth	40 (95 th percentile)	37
Forearm to forearm breadth	50.5 (95 th percentile)	42.6
Hand thickness at meta carpal	3.3 (95 th percentile)	-
Hand length	19.02 (95 th percentile)	-
Palm length	10.73 (95 th percentile)	-

IV. Conclusion

It can be concluded that there was a change in worker's work capacity or ability due to monotonous work and prolong standing posture during performing the work. The problem in absence of the ergonomically designed relaxing chair were lower and upper back problems, headache, swelling on ankles, stiffness in leg joints, numbness in body, limiting movement in fingers were found. Besides this there was a problem of slips, falls, repetitive body motion and adoption of awkward posture for performing various restaurant activities. Proper anthropometric measurement was required for designing the relaxing chair was designed by using Auto CAD software. On the basis of anthropometric data recorded of the restaurant workers by calculating 5th, 50th, and 95th percentile. The relaxing chair was designed in such a way so that the worker can relax and support their hand, back, leg and head.

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