

NUTRITIONAL STATUS AND BODY COMPOSITION OF CYCLE RICKSHAW PULLERS IN INDIA

Chandan K. Pradhan¹, Sridhar Thakur¹ and Ajoy K. Mukherjee²

¹Regional Occupational Health Centre (E), Block DP, Sector V, Salt Lake, Kolkata, India

²S B Devi Charity Home, Calcutta Project, Basel, Switzerland,

5, Gulu Ostagar Lane, Kolkata, India

Email: pradhan_ckss@yahoo.co.in

Abstract

There are about 9 lakhs cycle rickshaw pullers in different parts of India. A number of studies have been carried out on anthropometric characteristics of agricultural, industrial workers as well as general population in India. Anthropometric data of cycle rickshaw pullers are scanty. The present study was carried out to assess nutritional status and body composition of Indian cycle rickshaw pullers. Study was carried out involving 952 rickshaw pullers (age 18 to 66 years) of five different places in India namely Kolkata, Chinsura, Bhubaneswar, Patna and Lucknow. Height and widths were recorded by using anthropometer and caliper. Skinfold thickness (biceps, triceps, subscapula and suprailiac) was recorded by a skinfold caliper. Nutritional status was determined from body mass index. Fat % and total fat were calculated from skinfold thickness. Bone minerals (kg) were calculated from body height and widths of elbow, wrist, knee and ankle. Body water (kg) and cell solids (kg) were also calculated from standard equations.

Mean body height and weight of the subjects of Kolkata was significantly lower than those of Bhubaneswar, Patna and Lucknow. Out of 952 rickshaw pullers 51% were underweight (BMI <18.5), highest being 60% in Kolkata and 45% in Chinsurah. Mean value of lean body mass varied from 41.81 ± 4.63 kg (Kolkata) to 44.34 ± 4.77 kg (Patna). Lean body mass of the subjects of Kolkata and Chinsura were significantly lower than those of Bhubaneswar, Patna and Lucknow. On the other hand, Chinsurah subjects had higher body fat as compared to subjects of other places except Patna. Body water values of Patna and Lucknow subjects were significantly higher than those of other places. Bone minerals value was lowest with Kolkata subjects. The values of other places were not significantly different. Cell solids contents of Kolkata and Chinsura subjects were significantly lower than those of other places.

Keywords: nutritional status, body composition, cycle rickshaw pullers

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EXPOSURE OF AUTO DRIVERS TO NOISE DOSE, IN RUNNING CONDITION IN KOLKATA CITY OF WEST BENGAL STATETirtharaj sen¹, Debamalya Banerjee², Bijon Sarkar³¹ Bengal Institute of Technology & Management/ Dept. of Electrical Engg,
Santiniketan, India² Jadavpur University/ Production Engg. Dept. Kolkata, India³ Jadavpur University/ Production Engg. Dept. Kolkata, IndiaEmail:¹ tirtha.bitm@gmail.com ² debamalya_banerjee@yahoo.co.uk ³
bijon_sarkar@email.com**Abstract**

This paper studies work exposure of drivers of auto rickshaws in Kolkata, India in a running condition to noise. Equivalent noise exposures of drivers at work and in-auto noise are evaluated using a precision dosimeter in a different area in summer and rainy season. The most negative effects caused by noise exposure are related to the hearing system and may produce professional deafness or even permanent deafness. As these effects have a very important influence on driver's health and well being, so, it is necessary to assess the noise exposure and to develop mechanisms for studying and proposing preventive solutions.

Simultaneous measurements were done regarding noise levels, vehicle flow and traffic composition and thus some mathematical models have been developed in order to estimate those sound pressure levels. Readings were taken in different routes in south Kolkata and the noise dose analyzed. The A-weighted values of L_{eq} (12), L_{10} , L_{90} , L_{np} TWA (Time weighted Average) and TNI (Traffic Noise Index) were determined.

Also from direct analysis from the machine, Average Sound Level (LAV) and percentage noise dose from 70dB to 140 dB have been obtained.

Keywords: Noise dose, Time weighted Average(TWA), exceedance times.

**OCCUPATIONAL STRESS AMONG POLICE OFFICERS: A CASE STUDY IN
HOOGHLY DISTRICT POLICE SERVICE OF WEST BENGAL**

Atanu Saha, Subhashis Sahu and Goutam Paul

Department of Physiology, University of Kalyani

Email: skcsahu@yahoo.co.in

Abstract

Police service has been considered as the one of the stressful occupation in the world. The present study was conducted to evaluate job stresses and work performances of police officers of Hooghly in West Bengal and to recommend some ergonomic measures to reduce the job stresses and to improve the work performances.

Job stresses were studied by measuring physiological variable like heart rate and blood pressure; psychological stress was studied by perceive exertion rating. Cancellation test was used to study the degree of performances and problems related to health, society and family were studied by questionnaire.

It was observed that the heart rates and blood pressures of the police officers were increased with the advancement of the duty periods in the working days, although the heart rate and blood pressures returned to the pre-duty level after a long break during working hours. From the result it is suggested that police job exerts physiological stresses on the health of police officers performing their duties as duty officers. It was observed that PER was higher in all categories of police officers and maximum for duty officers. From the result it is suggested that police officers suffer from psychological stresses due to their job nature. It was also found that the work performances of the police officers were decreased gradually with the progress of duty periods in working day as per letter cancellation test. The results of the questionnaire study shown that health problems like gastrointestinal and cardiac problems, sleep deprivation; mental anxiety, society and family related problems of police officers were significantly increased with the progress of their service length.

It is concluded that police officers suffer from both physiological and psychological stresses and decreased work performances; social and family related problems. It may be recommended that introduction of ergonomically shifting duty, proper scheduling of leave system, proper consumption of calorie specific diets and social interactions can reduce the job stresses and improve the work performances of police officers.

Keywords: Ergonomics, police officer, physiological response, job stress

DETERMINATION OF HUMAN THERMAL COMFORT FOR INDIANS

K. Manikandan and Rina Maiti

Human Engineering Laboratory, Centre for Product Design and Manufacturing,
Indian Institute of Science, Bangalore – 560012.

Email: manik@cpdm.iisc.ernet.in, rmaiti@cpdm.iisc.ernet.in

Abstract

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) provide a user-friendly method for calculating thermal comfort parameters using different empirical models, which is frequently used for determining Heating, Ventilation and Air Conditioning System (HVAC system) in indoor environment.

The objective of this study was to assess the thermal conditions and their effects on occupant's thermal comfort in India based on ASHRAE method. A field study was conducted on twelve healthy university male students having age (24.42 ± 1.26) years, in a closed room with three different environmental temperatures such as Normal (20-25°C), Cool (<20°C) and Hot (25-30°C). A 10k Ω thermistor was used to measure skin temperature from ten different locations of each subject and then the mean skin temperature was calculated based on Hardy-Dubois equation. This thermistor was initially calibrated by K-type thermocouple. Arterial Temperature was recorded at elbow joint in folded hand condition from individual subject and then their core temperature was calculated using Pennes bioheat equation. Body Surface Area (BSA) of individual subject was determined using Dubois-Dubois formulae.

Different types of heat losses like conduction, radiation, convection, evaporation and respiration from individual subject were calculated in three different air temperatures and showed a significant difference ($p < 0.0001$) in response among themselves. Then thermal load was calculated as the difference between heat production and heat loss. From metabolic rate and thermal load, Predicted Mean Vote (PMV) was estimated. Predicted Percentage of Dissatisfied (PPD) based on 7-point scale was then calculated using PMV value. From PPD-Ambient Temperature graph, comfort zone was identified as ambient temperature corresponding to PPD of =10% and within ± 0.5 PMV value. The thermal comfort level for Indians was estimated as (22.3-24.6)°C.

Keywords: Thermal comfort, ASHRAE method, Indian thermal condition.

OCCUPATIONAL HEALTH HAZARDS OF FACTORY WORKERS

Manjari S Acharya, Shikh Ranjeet Kaur and Rajpurohit Priti D

P .G. Department of Home Science, Sardar Patel University, Vallabh Vidyanagar.

Email: shikhranjeetkaur@gmail.com

Abstract

The value of life, well being, economic cost of the society industry and other occupations depend on wise utilization of human resources. Careless or inadvertent exploitation of these resources often results in fatigue various types of bodily as well as psychosomatic illness or disorders. The broad objective of the study is to study the occupational health hazard of factory workers.

For present study “Engineers & Contractors” Divine Power estate, a manufacturer of Chemical, Electrical & Textile Processes Equipments from: FRP, FRB, FRV, FRVE, FRE, PVC, PP, & HDPE was selected. For present study all 30 workers were taken as sample as the sampling method was Purposive sampling. The Descriptive Research with Observation Method and Videography of factory workers with Questionnaire Cum Personal Interview was planned which included the background information, work environment, occupational health hazard and work related injuries. The data analysis was presented in terms of frequency distribution and graphs. The posture analysis was done by RULA and OWAS method. Body part discomfort severity scale by Corllete and Bishop (1976) was used.

The result showed that majority of the workers had lower back pain in legs RULA and OWAS action level indicated the immediate change in posture and corrective measures to be taken in future. The majority workers had fewer occupational health hazards.

The suggestions made will encourage reduction of discomfort due to awkward postures and ill health of workers.

Keywords: Occupational health hazards, Work Environment, Workers Productivity.

AN INTEGRATIVE APPROACH FOR EVALUATING WORK RELATED MUSCULOSKELETAL DISORDER

Mishra W¹, Amitabha De¹, Iqbal R. ¹, Gangopadhyay S². and Chandra A.M. ²

¹National Institute of Industrial Engineering (NITIE), Vihar Lake, Mumbai – 400 087, India

²Department of Physiology, University College of Science, Technology and Agriculture,
University of Calcutta , Kolkata 900 009, India

Email: m.wricha84@gmail.com

Abstract

The existence of 'work related musculoskeletal disorder' is in almost all occupations and one of the major areas of concern for ergonomists, OHS professionals and physiotherapists. Designing a methodology for evaluating work related musculoskeletal disorder is a complicated process. Over the years, large number of case specific techniques for evaluating work related musculoskeletal disorders were developed, however an integrated approach for varied occupations involving majority of ergo-risk factors is yet to be evolved.

In the present study, an attempt has been made to propose a framework for evaluating work related musculoskeletal disorders. The framework has been broken into two phases. Phase 1 - Ergo-risk evaluation, Phase 2 - Musculoskeletal Disorders (MSD) evaluation. Ergo-risk evaluation determines the relationship of work relatedness and musculoskeletal disorders. Musculoskeletal Disorders (MSD) evaluation tries to assess the presence of discomforts in different body regions, through subjective evaluation tools and by clinical examinations. The model was tested on two different occupational groups.

Total 45 subjects were involved in the study; 15 white collar workers (engaged in sedentary activities) and 15 construction workers (engaged in heavy manual activity) and 15 students (as control group). The level of discomforts was more in construction workers. It is expected that this variation may be due to the nature and demands of the work. The framework is found to be reliable. However, it requires testing on larger sample and on varied occupations.

Keywords: Work related musculoskeletal disorder, framework, construction and white collar workers