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Study for work and workstation design of comfortable office

Renu and Dr. Promilakrishna Chahal

Abstract
This study is a research on ergonomics field, specifically for ergonomics work station. This research begins with direct observation of office work, the worker and the workplace. A good workplace design can increase employee satisfaction. In addition to the aspect of occupational health, the steps of the process are also subject matter in an attempt to solve the research problem. It is a known fact that Awkward and prolonged static postures contribute to musculoskeletal discomforts among office desk workers. This has had a significant impact on the health of the employees. We can provide information on various health-related issues of office workers due to the workplace design and environmental conditions in the offices. During this study we observe the users movement and problems. The main objective is to provide the reader with an accurate overview on the college office and to analyse the work, worker and workplace.

Keywords: Work, workstation design, comfortable office, ergonomics field

Introduction
A good workplace design can increase employee satisfaction. A good workplace design should consider the ergonomics principles which can fit the full spectrum of user groups. Fit positions are characterized by low levels of workload during on-the-job activity. Workload can be reduced and even eliminated if humans can still be in a natural state. Repetitive Stress Injuries (RSIs) is one of the disorders associated with the workplace. The wrong type of chair or desk, or the wrong posture, can prove fatal in the long run. It can put pressure on your eyes, cause headaches, back pain, neck pain, and carpal tunnel syndrome due to the repetitive nature of task. Office ergonomics involves adopting designs that best suits your workstation, your job requirement and your situation. It focuses on the placement of the chair, desk, keyboard, monitor and telephone etc. Workplace design should aim to design to meet human need rather than forcing people to fit into the design. The purpose of the arrangements of chairs and desks in an office should be to create an environment that is worker friendly. This allows a worker to produce the best results while maintaining good health. Ergonomics is a science concerned with the suitability of an office design for people. Ergonomics is a human-centered approach to understanding the interactions between humans and other components of a system. A workplace with good consideration of ergonomics in design can prevent musculoskeletal discomfort, improve productivity and work efficiency, reduce production costs and optimize human well-being. An ergonomic the design of workplace attempts to achieve an appropriate balance between the worker capabilities and worker requirements, to improve worker productivity, as well as provide worker physical and mental well-being, job satisfaction and safety. The research says that according to the laws of ergonomics, each burden received by the body must be balanced with the physical and cognitive skill as well as the limitations of the body that assent the burden. The load accepting capacity of the human body varies greatly, depending on skill level, fitness, nutritional intake, gender, age and anthropometry of the body. Work styles are becoming more complex, evolving to include wider variety of different types of workspace. All these factors increase ergonomic hazards for office workers now and in the future. Previous studies have reported of physical, psychological and organizational problems that office workers face, including problems such as incorrect workstation set-up, poor lighting, poor layout of furniture, electrical hazards, etc. Therefore, the present study was aimed to find out with the risk associated with the workplace design, indoor office environment; MSD's problems and other health-related problems among the office workers.

Objectives

To analyse existing condition of office workplace

To analyse the work, worker and workplace

Methodology

This section presents the procedure which will be adopted for conducting the present investigation. The study will be carried out in hisar district, Haryana state. One college in department office was analysed for the study, as well as know that many activity are in office. The study was carried out to see the movements of workers and problems faced during activity by gathering data through observation method and self design questionnaires distributed to 5 office workers at college campus. Work, worker and workplace were analysed. The observed data were tabulated and further improvements were recommended.

Result and discussion

In table 1, work is studied; the position of keyboard and mouse for used in a work at right position and no used adjustable monitor can put pressure on your eyes, cause headaches, back pain, neck pain, and carpal tunnel syndrome due to the repetitive nature of task. Not availability of foot rest and awkward Posture for cause musculoskeletal discomfort, reduce productivity and work efficiency, reduce production costs and optimize human well-being.

Table 1: Study of work

Questions	Response (Yes/No)
▪ Is the position of your keyboard and mouse right?	yes
▪ Are you able to use your Notebook in the most optimum way?	yes
▪ Do you have an adjustable monitor to reduce eyestrain?	no
▪ Is there a presence of noise control mechanisms in your office?	no
Can the height, seat and back of the chair be adjusted to achieve the posture outlined below?	yes
Are your feet fully supported by the floor when you are seated?	no
Does your chair provide support for your lower back?	yes
Do your armrests allow you to get close to your workstation?	yes
Are frequently used items within easy to reach?	yes
Is your monitor positioned directly in front of you?	yes
Suffer from any muscular/ physical ailments at your workplace	yes
Are Furniture and Office Equipments comfortable	
Chair	yes
Table	no
Storage	no
Placement of Printer	yes
Placement of Monitor	yes
Placement of Keyboard	yes
Placement of Mouse	yes

In table 2, worker is studied; Anthropometric measurements have great involvement in designing an ergonomic working environment for work from office employees. There are existing body dimensions that are essential in designing furniture, especially for office ergonomics. And for this research, the collection of all required anthropometric dimensions for the office workstation is adapted to the ISO 7250 as the standard for all office workers' body dimensions. For the study, these body dimensions were prudently selected with the consideration in terms of enhancing comfort, safety, and ease of getting the required dimensions for designing office furniture.

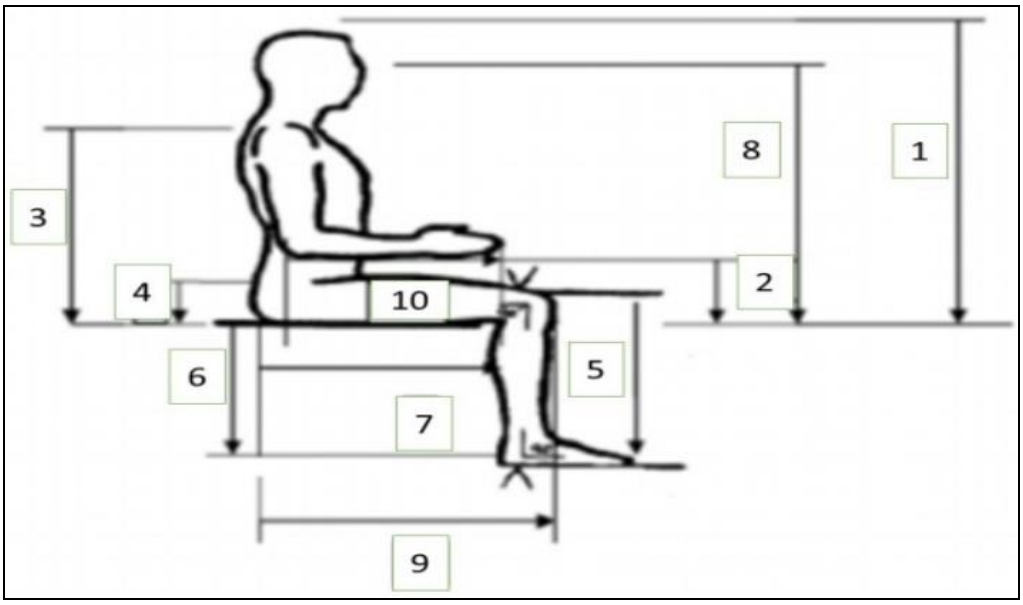

Fig 1: Employees body dimension

Table 2: Table showing the basic worker's body dimensions and the description according to ISO 7250

No. according to Figure	Employees body dimension	Description of the body dimensions according to ISO 7250
1	Sitting Height	Vertical distance from a horizontal sitting surface to the highest point of the head (vertex)
2	Sitting Elbow Height	The vertical distance from the bottom of the tip of elbow (olecranon) to the sitting surface, measured with the elbow in 900 of flexion.
3	Sitting Shoulder Height	The vertical distance from the top of the shoulder at the acromion process to the sitting surface measured with a stadiometer.
4	Thigh clearance	Vertical distance from the sitting surface to the highest point on the thigh
5	Knee height	Vertical distance from the floor to the highest point of the superior body of the patella
6	Popliteal height	Vertical distance from the foot-rest surface to the lower surface of the thigh immediately behind the knee, bent at right angle
7	Buttock knee length	Horizontal distance from the foremost point of the knee-cap to the rearmost point of the buttock
8	Eye height, sitting	Vertical distance from a horizontal sitting surface to the outer corner of the eye
9	Forearm hand length	The distance from the posterior end of the elbow to the longest finger of the hand while the upper arm was at an angle of 900 with the lower arm measured with a vernier caliper
10	Body Mass	Total mass (weight of the body) which was measured with the help of weighing scale

Table 3: Study of worker

Worker	Respondents
Non teaching staff	3
Other workers	2

In table 3, workplace is studied, to design a proposed workplace for work from office employees. In-office lighting and glare, the proposed design used supplemental task lighting on the side. The window also has curtains and the corners of walls are decorates for flower pots. Lastly, in terms of environment, the design has a portable fan to maintain a comfortable temperature as well as plants that are a good source of fresh air.

Table 4: Study of workplace

Related to Workplace Design	Response (Yes/No)
Lighting	yes
Humidity	yes
Noise	no
Storage	yes

Findings

Awkward Posture
Non- availability of foot rest
Not proper ventilation
Lighting is proper for worker and workplace

Recommendation

The researchers recommend based on the self-design questionnaire for use data collection then a result that is best for adjusting the office workstation for the employees. A good workplace design should well considered the ergonomics principles which can fit to the full spectrum of users group. Changing your workspace can improve your work productivity. Use ergonomics to reduce injury and increase physical efficiency. People working in ergonomic workplaces have improved health. If working in a standard environment then employees will feel less stress in your body because adjusting the workstations to fit your height. Employees will experience less anxiety, increased awareness, improved moods, and focus. This means that everyone can focus more on their work. The better focused they are the higher the level of productivity. The small adjustments can improve comfort and productivity.

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