



IDENTIFYING ERGONOMICS RISKS FACTORS IN BANK CLERK WORKSTATIONS

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Abstract: Bank clerical employees are known to work long working hours without planned rest breaks. Poorly-designed workstations and repetitive tasks are the cause of many health concerns especially musculoskeletal disorders. Workplace ergonomics standards improve employee productivity, safety, and health. The main objective was to study the bank clerk's workstation design to identify ergonomics risk factors. A survey was conducted with 160 randomly selected clerical bank staff from eight major banks in Mumbai. The participants were observed and interviewed using a self-constructed and validated questionnaire. Results revealed that more than 50% of subjects experienced pain due to continuous use of input devices and time paucity was two of the most influential factors for this musculoskeletal discomfort. Inapt work practices coupled with a poor fit between furniture design required the clerical staff to adopt awkward sitting positions. Individual factors (e.g., age, BMI, seniority, exercise habits, general health), ergonomic factors (e.g., keyboard placement, uncomfortable posture, mouse use, intense computer use), and psychological factors (e.g., psychosocial work demands, managerial support) are all potential risk factors for the development of musculoskeletal symptoms. It was also determined that to produce a sustainable and effective office work environment, the working facilities and worker behavior must be modified and improved, and office safety and health standards must be implemented as part of organizational practice

Key Words: Bank Clerks, Ergonomics, Workstation Design, Risk factors, Safety, Occupational health.

1. INTRODUCTION:

The banking industry is tremendously important in today's economic globe. Modern banks carry out banking operations on a larger scale while complying with regulatory requirements. The government has a significant influence on the financial system. This needs bank management that delivers excellent customer service and creates a win-win situation. Workplace ergonomics requirements boost employee productivity, safety, and health. Ergonomic guidelines provide techniques for increasing accessibility and visibility by providing standardized techniques and practices for monitoring and lowering physical stress and mental exhaustion caused by motion, vibration, shock, and noises. Working without changing posture for a long period, repetitive body motions, and non-ergonomic work conditions can lead to various health problems in bank employees. These health-related issues cause financial, time, and labor force losses. Ergonomic workstation layout and ergonomics training for employees diminish risk factors. The goal of this study is to look at the ergonomic risk factors of bank personnel who deal with computers [1].

Banker responsibilities include accepting new customers and assisting them with the onboarding process [2]. Managing client bank accounts, including account opening and closure and transaction oversight. Deposits, payments, and withdrawals are all processed. Overdrafts and loans are authorized and evaluated. When required, they also handle additional transactions such as cashier checks or money orders [3].

Musculoskeletal issues in the neck, lower back, upper back, and shoulders are prevalent, and the symptoms are strongly associated with well-known factors such as poor posture, body mass index, job demands, and occasional rest periods. An investigation into the design suggested the acquisition of high-quality equipment that meets ergonomic standards. Workstations, on the other hand, are set up with minimal concern for ergonomic consequences found potential links between physical and mental factors. In the banking business, there are risk factors that might lead to stress as a



result of ergonomics risks. Banks are at the heart of the economy, providing financial services to individuals and companies. Banks are at the center of attention of the economy, offering a wide range of financial services to both businesses and individuals [4]. Due to the physical and mental demands of their professions, bankers are at significant risk of developing musculoskeletal diseases.

Workplace stress among bankers is confirmed in a few surveys and studies, but the fact that ergonomic risk factors contribute majorly to this stress is rarely mentioned in any research conducted so far. Mumbai is the country's largest city. Commercial Capital, the banking personnel is required to deal with an increased workload. Similarly, the Banks emphasize the delivery of efficient services, as well as the health, safety, and security of their customers as well as staff convenience. This will improve workplace ergonomics and also help maintain strong staff morale.

Specific Objectives of the Study:

The specific objectives of this study are to (i) gain knowledge about the demographic profile of bank employees; (ii) identify ergonomic risk factors in bank employees' workstations; and (iii) suggest control methods to alleviate the discomfort experienced due to workstation design.

2. Literature Review :

Most desk 22employees have pain in their necks and backs during the workday. Workers with high work strain and muscle tension were more likely to acquire musculoskeletal diseases. The amount of time spent working on a computer in a modern workplace has expanded substantially. The study concluded that there were 245 cases of musculoskeletal issues at work (73.1%). The most seriously affected body parts were the lower back, neck, upper back, and shoulders.

Work experience, alcohol consumption, poor posture and job stress were all found to be significant predictors. 80.5% of bank office computer users had MSDs in any body part within 12 months. Sex, age, smoking/drinking habits, length of employment and bad posture all contribute to an increase in MSD. The low back, upper back, neck, hand/wrist, shoulder, and other locations were found to have a high prevalence of illnesses.

3. Materials and Method :

An exploratory study was conducted among 160 banks clerical randomly selected (age range 25 - 40) from 16 banks to analyze the fit between the work, the worker, and their workstation. Clerks with a minimum related work experience of 1 year/12 months belonging to any ethnicity but working in a selected bank were included in the study. Also, clerks belonging to any BMI Category were included. Refusal to sign the informed consent was the main reason to exclude the participant. The tools used for data collection were a self-constructed questionnaire, CMDQ (Cornell Modified Discomfort Questionnaire), observation, and interview technique. The self-constructed questionnaire included both open-ended as well as close-ended questions. Part A includes questions probing the demographic profile such as education level, age, job experience, vital status, self-rated health, general sickness, and medication status. Part B comprises information on the work profile, workstation analysis, and posture evaluation. Part C is comprised of the CMDQ (an open-to-use, free source from Cornell University) [5]. The observation method was used to examine the various work-related postures and situations.

Fundamentally, it is the study of an individual's behavior in their work environment. A pilot study was conducted among 10 clerical staff to validate and alter the self-constructed questionnaire. The personal interview approach entails a face-to-face personal interview (20 – 25 mins each). The collected data was coded into the MS Excel 2019 Version, which was then analyzed using simple statistics. Tools like OWAS (Owako Working Posture Assessment System) and CMDQ (Cornell Musculoskeletal Discomfort Questionnaire) was also used for posture assessment of the clerks.

Since the data collection and personnel were conducted during the Covid 19 nationwide lockdown, many challenges were encountered. Also, the researcher was expected to maintain social distancing and the persistent fear of infection. The interview method was used to understand the prevalence of MSD too. Bank clerical staff can be called as front-line workers for the kind of service they provided during the Covid 19 nationwide lockdown. Excessive work hours added to the pains and aches experienced.

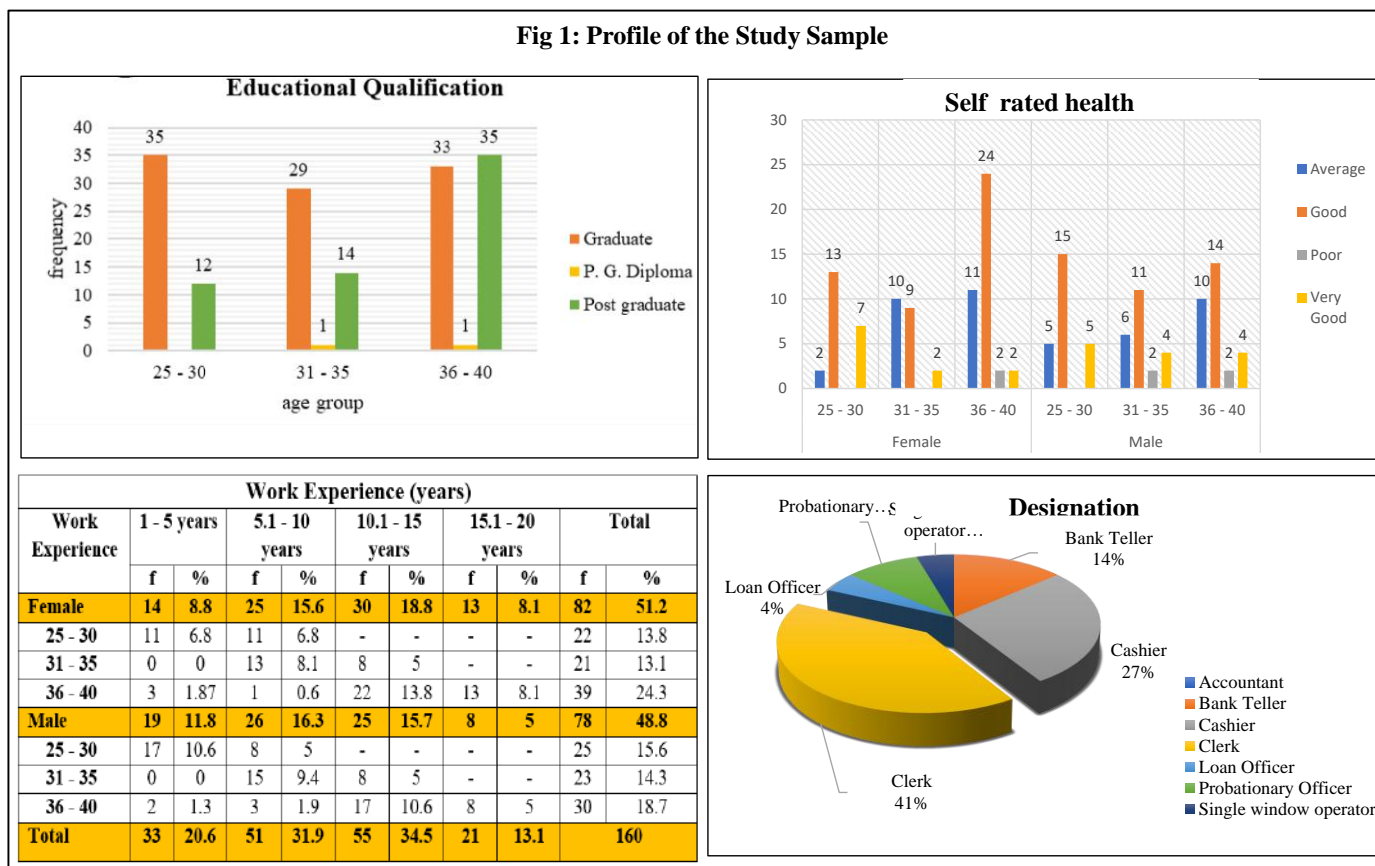
4. Findings and Discussion:

Demographic Profile of Sample: A total of 160 bank clerical workers from eight banks in Mumbai and its surroundings were questioned. Figure 5 shows that the sample comprised 82 (51%) female bank clerks and 78 (49%) male bank



employees. The sample's average age is 34.06 years, with 69 participants. (43%) of participants were between the ages of 36 and 40.

Fig 1: Profile of the Study Sample



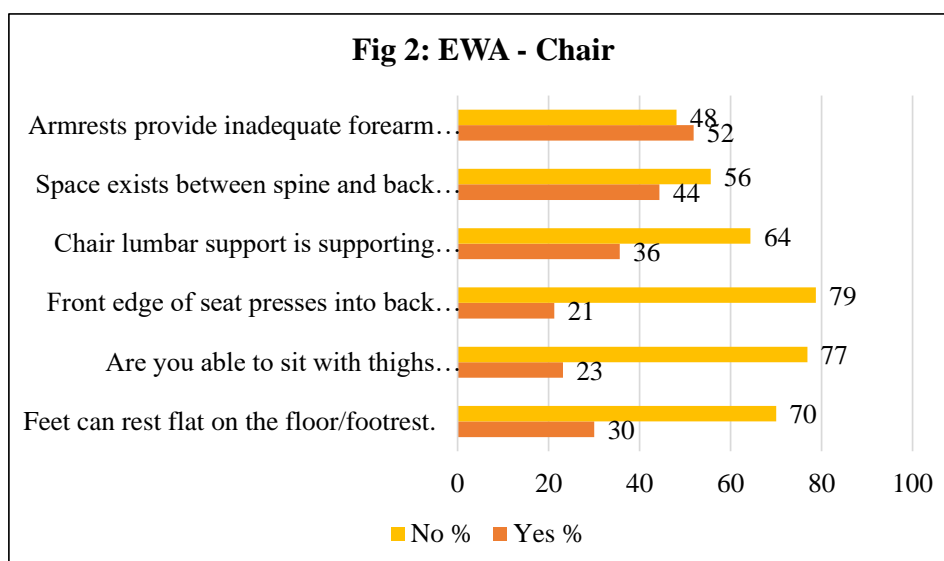
The majority of the bank clerical staff are women 82(52.2%) as compared to males 78(48.8%). In terms of bank workers' educational credentials, a degree in commerce or a management-related specialty was discovered to be a crucial prerequisite for employment in banking. According to the results, 97 (60.6%) were graduates, while 63(39.4%) had a post-graduate degree/diploma. Female [22(13.8%)] clerical staff in the age group of 36 – 40 years had a maximum of 10.1 – 15 years of work experience in banking, whereas 17(10.6%) male clerks in the same age group, i.e., 36 – 40 years had 10.1 – 15 years work experience.

Ergonomic Risk Factors in the Workstation:

An ergonomic workstation assessment involves a detailed assessment of an individual's work area including the work environment. The work area may include their computer, keyboard and mouse, desk, and chair. The assessment will identify the demands placed on the musculoskeletal system as well as the physiological system and will look for certain risk factors which may potentially lead to future health problems, or be causing current health problems leading to reduced productivity or time off work. [6]

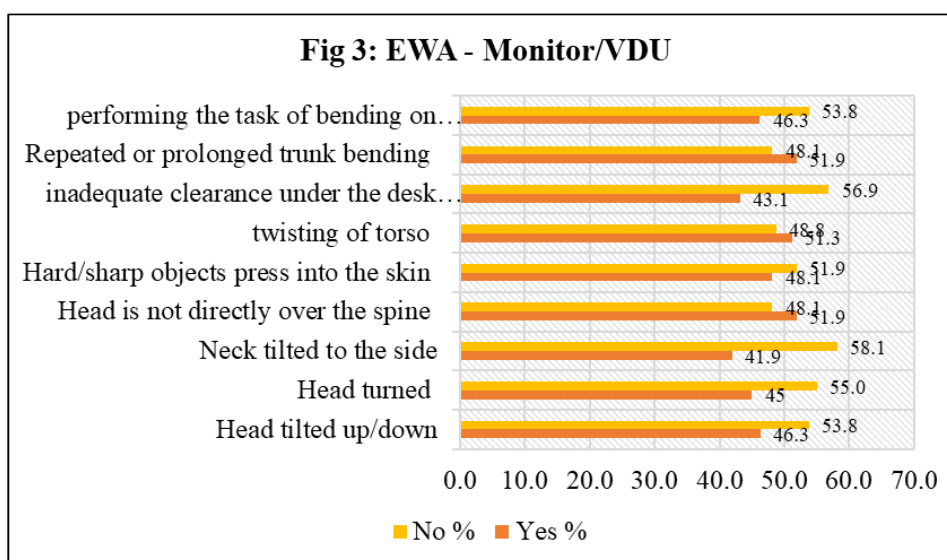
The summary of the Ergonomic Assessment of the Bank Clerk's workstation is presented below:

Chair: The chair is an important component of the workstation; the researchers considered the respondents' self-evaluation on basis of comfort concerning the chair used by them. The body structure and dimensions of each clerk were different and hence one size-one design was not suitable for all. This was very evident in their responses (Fig 2). 112(70%) said they couldn't rest their feet on the floor/footrest; 123(77%) said their thighs weren't parallel to the floor; 126(79%) complained about compressive stress at the popliteal area, and 103(64%) mentioned pain/discomfort in the lumbar region due to poor fit of the lumbar spine to chair backrest design.



Keyboard While assessing their posture as well as the use of input devices such as keyboards, 81(50.6%) could not keep their wrist flat and forearms parallel with the worksurface. Also, 81(50.6%) had their elbows positioned away from their torso while using a mouse. 45 (28.1 percent of males and 43 (27% of females) report holding a static posture for extended periods while conducting work tasks.

Monitor/VDU: In terms of monitor/visual display, in the majority of the bank employees 83(51.9%) said that while using the monitor their head was directly over the spine and 83(51.9%) indicated that their work tasks are repeated or with prolonged trunk bending. The results also indicate that 82 (51.3%) perform tasks by twisting their torso.



Work Environment: The Work Environment is a set of factors that influences employee performance. Employees perform better when their workload is more appropriate. A pleasant working environment, both physically and psychologically helps employees to perform better. The work environment parameters were within the ergonomic recommendations for most bank clerk workstations.

Organizational Factors: Due to the tremendous workload faced by bank clerks, they were forced to work long working hours with inadequate work shifts. As their jobs include doing multiple tasks at a time, some employees responded that that was not satisfied with their job and the challenges they face on daily basis.



Table 1: EWA- Organizational Factors

Organizational Factors	Yes		No	
	f	%	f	%
Long working hours	81	50.6	79	49.3
Work overtime	86	53.7	74	46.2
Irregular work shifts	74	46.2	86	53.7
Satisfactory job content, challenges, and utilization of skills	83	51.8	77	48.1
Convenient work schedules	84	52.5	76	47.5
Variety of tasks	93	58.1	67	41.8

Psychological Factors: High workload, long working hours, etc., Are some of the factors that affect the performance of bank employee's performance, thus when bank employees were asked about psychological factors, the majority of them responded that they work under pressure and are dissatisfied with their work. 97(60.6%) mentioned specifically that they worked under pressure and 98(61.2%) mentioned being dissatisfied with work content.

Prevalence of Musculoskeletal Discomfort:

The Cornell Modified Discomfort Questionnaire (CMDQ) was inducted to understand the prevalence of body pains/aches among the bank clerk, The results indicate that 148(95%) complained of discomfort in the lower back region, which interfered substantially with their ability to perform work-related tasks. Whereas 40 (25%) of the participants reported discomfort in their left wrist.

5. Recommendation Based on The Results:

Effective control procedures protect employees from hazards at work, help in the prevention of accidents, illnesses, and injuries, and reduce or eliminate safety and health issues. They also help firms provide a safe and healthy working environment. Regardless of the size of the company, operational performance in the workplace is dependent on its ability to manage and mitigate risks. There are several methods by which hazards can be under control. Based on the results of this study and the researchers' knowledge of workplace safety and ergonomics, a few suggestions are laid down to reduce untoward incidents and help increase safety in the workplace:

- **Engineering Controls:** Engineering controls include mechanical devices and processes, as well as other physical controls. Work rates on a roster, for example, can be modified to reduce tiredness, as can machine guards and adequate ventilation systems.
 - Provide an ergonomically appropriate workspace (keyboard, chair, etc.) monitors, mouse,
 - The keyboard and mouse should be set at the same height as the employees. situated at elbow height, enabling them to naturally drift over the keys.
 - The monitor should be placed directly in front of the employee, not to the side. They tend to tilt their heads up and down if it is not exactly in front of them.
 - A footrest may be necessary once the chair has been adjusted.
 - Workstations that allow employees to efficiently shift from a seated to a standing position.
 - Arrange workstation and tasks for a postural change. (Sufficient space for leg movement below the desk).
- **Administrative Controls:** Administrative controls are work practices or processes that are designed to limit exposure to risks. Establish appropriate processes and safe work practices, such as limiting the length of time employees are exposed to hazardous jobs to minimize employee exposure. routine maintenance and cleaning practices, hazard training, and suitable labour methods, as well as the use of signage to warn individuals of possible dangers
 - Introduce work methods that allow people to be cycled away from duties to decrease the amount of time spent in continuous exertion, repetitive motions, and unpleasant postures.



- Create a suitable rotation system in which employees alternate between occupations that need the use of diverse postures
- Workstations and work locations should be built to minimize reaching, bending, and stooping.
- other difficult positions
- Improve the work schedule to minimize excessive overtime and shift work, both of which are detrimental. can cause tiredness
- Increase employee numbers to reduce individual workloads.

Personal Controls:

- Ensure that staff is properly trained in the use of PPE and that equipment is suitable and well-maintained.
- Employees must modify their behavior and working procedures.
- To decrease tension and strain on the muscular skeleton, work in a neutral position system.
- Allow for adequate rest breaks since adequate rest can help reduce stress. Stretching exercises should be performed every hour to prevent muscular tiredness.

6. Conclusion and Way Forward:

According to the study, all ergonomic components must be appropriately controlled to avoid MSDs and promote worker productivity and well-being. According to the study's findings, more than 60% of employees are discontent with the work content and job satisfaction indices. Adopting principles of cognitive ergonomics can benefit the workplace by improving the morale of the workers and thereby improve workers' productivity, interpersonal relationships at work, and general health.

Several challenges were faced especially due to the nationwide lockdown while collecting first-hand information from the participants.

7. Scope of Study: The Human Resources department can utilize the results of this study to determine how happy the company's employees are with the ergonomics of their workstations. Workshops on different aspects of ergonomic training can be scheduled, viz., good posture, health, and well-being, the importance of physical fitness, etc. issues may be held utilizing,

Similar studies can be conducted on various desk job professionals such as front office assistants, data entry operators, corporate assistants, etc. Studies to augment the existing banking practices in light of occupational health must be conducted to increase awareness of workplace safety, good ergonomics, safe material handling, adoption of neutral working postures, healthcare policies and systems to guarantee staff comfort and safety creating a health plan and a workplace safety policy that includes risk assessments, incident handling, and emergency management plan. Everyone can profit from ergonomics knowledge, and hence it is strongly felt that the results of this study can help immensely.

Author Statements:

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****Second Author: Dr. Roopa Rao-** - Has over twenty-five years of experience teaching at the undergraduate and postgraduate levels. She is on the Board of Studies of two independent institutions and has written five ISBN publications. She has more thirty research papers, posters, and publications in the fields of Ergonomics, Consumerism, Occupational Health, and Hospitality management to her credit, thanks to her competence in Ergonomics. She has directed 13 M.Sc. research programs in Sports Ergonomics and more than 40 undergraduate research projects in Ergonomics.