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Prevalence of Mouse Shoulder Among Public and Private Sector Bankers

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Abstract

Background: A computer has become a vital part of this technological world. The part associated with computers is the mouse, which directly affects the work and fatigue of the users. Bankers are responsible for working 8 to 10 hours daily, maintaining static posture for a longer time, using a computer, handling a mouse, working over the counter, typing on a keyboard, causing overuse of the upper extremity, and neck and thus causing micro trauma to the structures, leading to pain. This type of professional disease occurs due to excessive work at the computer or excessive use of keyboards and the computer mouse.

Objective: This observational study was conducted to study the prevalence of shoulder pain due to continuous handling of a mouse in bankers of the public and private sectors.

Methods: 100 bankers between the age group of 30 to 45 years were assessed using the Shoulder Pain and Disability Index (SPADI) Scale.

Results: The mean total SPADI percentage was 35.2 ± 16.5, indicating a moderate level of shoulder pain and disability among the participants. The mean pain percentage (39.9 ± 17.9) was higher than the mean disability percentage (32.3 ± 16.6), suggesting that discomfort was more pronounced than functional limitation. The findings demonstrate a notable prevalence of mouse-related shoulder pain among bankers, predominantly associated with prolonged working hours, minimal rest breaks, and inadequate ergonomic support.

Conclusion: The study identifies a high prevalence of shoulder pain among bankers, which suggests that prolonged computer use and poor ergonomic practices contribute significantly to the development of mouse shoulder.

Keywords: Computer Mouse, Rotator Cuff, Mouse Shoulder

Introduction

A computer is a necessity in today's world. The major associated parts linked with computers are the mouse, which directly affects the working and fatigue of the users. With the increase in computer mouse use, disorders related to muscle problems, known as musculoskeletal disorders (MSDs), have increased. Mouse operation requires activity of the upper trapezius muscles, pronator teres (PT), extensor digitorum (ED), and extensor carpi ulnaris (ECU) muscles to a large extent, causing micro strain leading to higher disorders[1]. The prevalence of musculoskeletal symptoms can vary considerably between occupational groups[2]. The complaints of arm, neck, and shoulder (CANS) are reported to be multifactorial in origin. Among computer users, studies have shown that repetitive movements, awkward posture, and positional

time durations in the use of computers are work-related risk factors associated with the provocation of CANS[3].

Among office workers, symptoms in the neck and upper extremities are particularly prevalent. It has been suggested that screen work (that is, work on desktop, laptop, notebook, or tablet computers) may be associated with neck and upper extremity symptoms in office workers, possibly contributing to the occurrence of musculoskeletal symptoms among them. Musculoskeletal risks associated with exposure to screen work can be physical or psychosocial, and may also interact with other aspects of work[2].

Bankers are responsible for working 8 to 10 hours daily, maintaining static posture for a longer time, using a computer, handling a mouse, working over the counter, typing on a keyboard, causing overuse of the upper extremity and neck, and thus causing micro trauma to the structures, leading to pain[4]. As well, staff engaged in phone banking, FX dealing, programming, and data input may be exposed to potential health problems caused by prolonged computer operation. The work task of bankers often involves significant use of head-down posture, repetitive tasks, poor body alignment, etc., which are the risk factors for developing musculoskeletal symptoms[6]. Bankers experience neck and shoulder pain every week. The three prominent regions where musculoskeletal symptoms are experienced among computer users were the shoulder (73%), neck (71%), and upper back (60%) areas[5].

Modern banking jobs rely heavily on the use of computers and a mouse, which necessitates the banker's repeated motion of the neck, shoulder, elbows, wrist, and fingers for data input and output of a variety of transactions. Hence, bankers are reported to be prone to work-related musculoskeletal pain[3]. Workers in both the banking and finance sectors are exposed to varying occupational health and safety issues. Poorly ergonomically designed workstations pose a risk to workers. Many staff members in the banking and finance industry use computers for extended periods daily. Poorly designed computer workstations, repetitive keying motion, and static working postures can cause eye strain, muscle ache, and general fatigue[6]. Improper holding of the mouse exerts pressure on the neuromuscular system and causes pain. Various incidents like raising the middle finger to avoid unintentional clicking increase stress at the joints; this stress is very fine in nature, but leading to regular and prolonged use will show results. With an increase in the use of computer at home as well as the workplace, the risk of MSDs has also increased. Any muscle damage usually leads to lifelong torment. The pain for a prolonged period causes repetitive strain injury. It is well known that 93.4% reported problems in the human hand and back are due to computer use[1].

Musculoskeletal pain with working hours and device usage in bankers, also risk factors like gender, age, and other personal features, such as height, smoking, and also psychosocial, organisational, and physical aspects of work like working hours, computing skills, bad posture, and rest intervals[5]. Occupational disease covers pathological conditions induced by prolonged work, exertion, or harmful factors inherent in materials, equipment, or the working environment. There are diseases that are caused by etiological factors inherent in the circumstances in which workers work. Repeated physical effort, or psychological stress, are contributing factors for occupational diseases. Long work hours and strenuous activities put workers at risk for work-related musculoskeletal disorders (WMSDs)[4]. Musculoskeletal disorders affect all persons regardless of age and sex and are prevalent across a wide range of industries and jobs[6].

Mouse Shoulder

Extended periods of working on a computer can place continuous stress on the shoulder area, particularly due to repetitive mouse and keyboard actions. Such long-term strain may result in tendon irritation, and

in extreme cases, deterioration or tearing of the rotator cuff muscles and tendons. When inflammation continues for a long period, the shoulder capsule tightens, causing a significant reduction in joint flexibility. As a result, movements such as lifting the arm overhead or placing it behind the back become painful and restricted[7].

Need of Study

Bankers have a sedentary nature of their work, which typically involves long hours of sitting, repetitive movements, and poor posture. A repetitive and prolonged use of the mouse causes shoulder pain in them. Hence, the need of study is to determine the prevalence of shoulder pain among bankers.

Aim and Objective

Aim

The aim is to study the prevalence of shoulder pain due to continuous handling of a mouse in banks of the public and private sectors.

Objective

To assess the Shoulder Pain and Disability Index (SPADI) Scale

Materials and Methodology

Methodology

- **Study design:** Observational study
- **Study type:** Cross-sectional study
- **Sampling method:** Convenient sampling
- **Sample size:** 100
- **Study population:** Bankers in the age group of 30 to 45 years
- **Study setup:** Public and Private banks around Pune

Materials

- Consent Form
- Data Collection Sheet
- SPADI Scale

Procedure

1. Permission from the college was taken, and the banks in Pune were approached.
2. The aims and objectives of the research were explained to the participants, and those who fulfilled the inclusion criteria were included in the study. Consenting participants were included in the study.
3. A Consent form, Demographic data sheet, and SPADI Scale were given to participants.
4. The scale focused on various components of shoulder pain and disability.
5. Each subject's scoring was thoroughly reviewed.
6. Accordingly, the data was collected, and data analysis was done.
7. The result was calculated, and the conclusion was drawn.

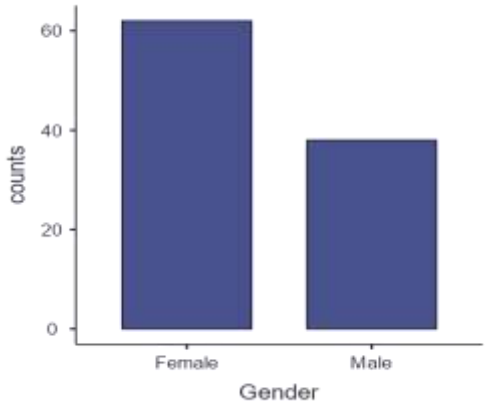
Statistical Analysis

Frequencies of gender

Table 1: Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Female	62	62.00%	62.00%
Male	38	38.00%	100.00%

Figure 1: Frequencies of Gender Graph



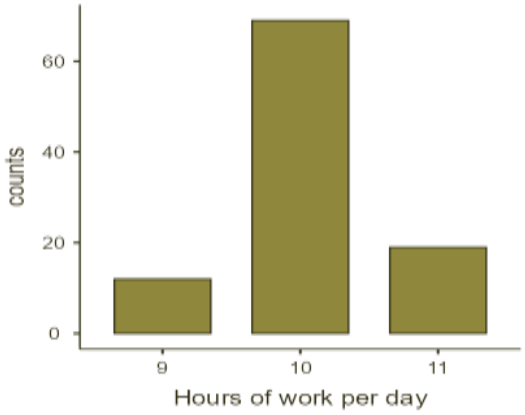
Interpretation: 62% females participated in the study, and 38% males

Frequencies of hours of work per day

Table 2: Frequencies of Hours of Work per Day

Hours of work per day	Counts	% of Total	Cumulative %
9	12	12.00%	12.00%
10	69	69.00%	81.00%
11	19	19.00%	100.00%

Figure 2: Frequencies of Hours of Work per Day Graph



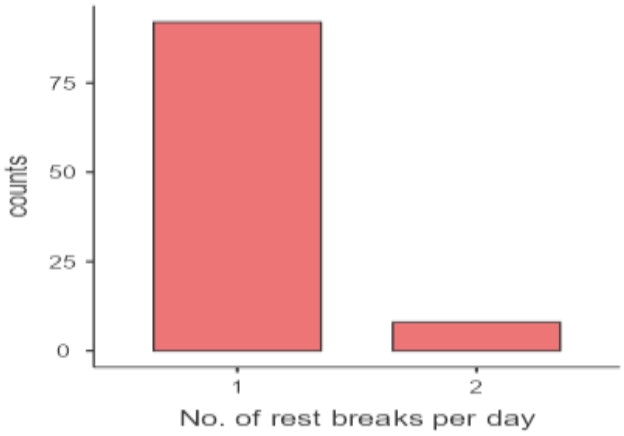
Interpretation: 69% of the participants work 10 hours a day. 19% work 11 hours a day. 12% work 9 hours a day.

Frequencies of the number of rest breaks per day

Table 3: Frequencies of the Number of Rest Breaks per Day

No. of rest breaks per day	Counts	% of Total	Cumulative %
1	92	92.00%	92.00%
2	8	8.00%	100.00%

Figure 3: Frequencies of the Number of Rest Breaks per Day Graph



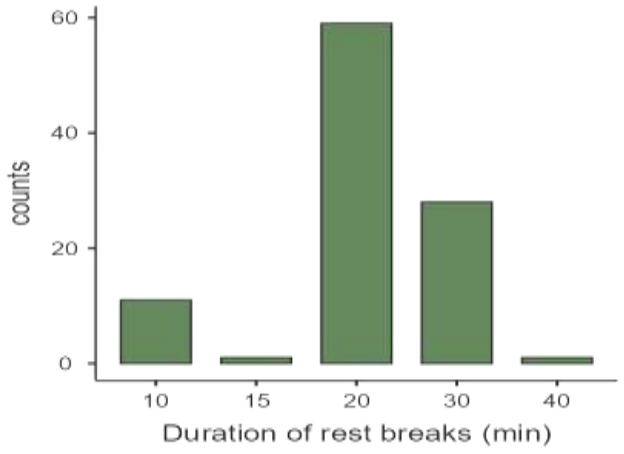
Interpretation: 1 rest break was taken by 92% of the participants, while 2 rest breaks were taken by 8% of them.

Frequencies of duration of rest breaks

Table 4: Frequencies of Duration of Rest Breaks

Duration of rest breaks (min)	Counts	% of Total	Cumulative %
10	11	11.00%	11.00%
15	1	1.00%	12.00%
20	59	59.00%	71.00%
30	28	28.00%	99.00%
40	1	1.00%	100.00%

Figure 4: Frequencies of Duration of Rest Breaks Graph



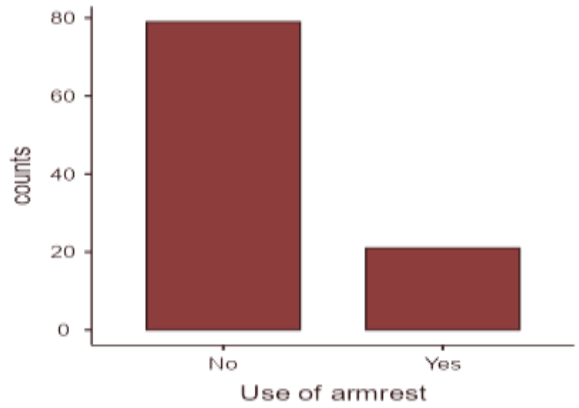
Interpretation: A 20-minute rest break was seen in 59% of the participants. 30 minutes in 28% of the participants. 15 minutes and 40 minutes each were seen in 1% of the participants.

Frequencies of use of the armrest

Table 5: Frequencies of Use of Armrest

Use of the armrest	Counts	% of Total	Cumulative %
No	79	79.00%	79.00%
Yes	21	21.00%	100.00%

Figure 5: Frequencies of Use of Armrest Graph



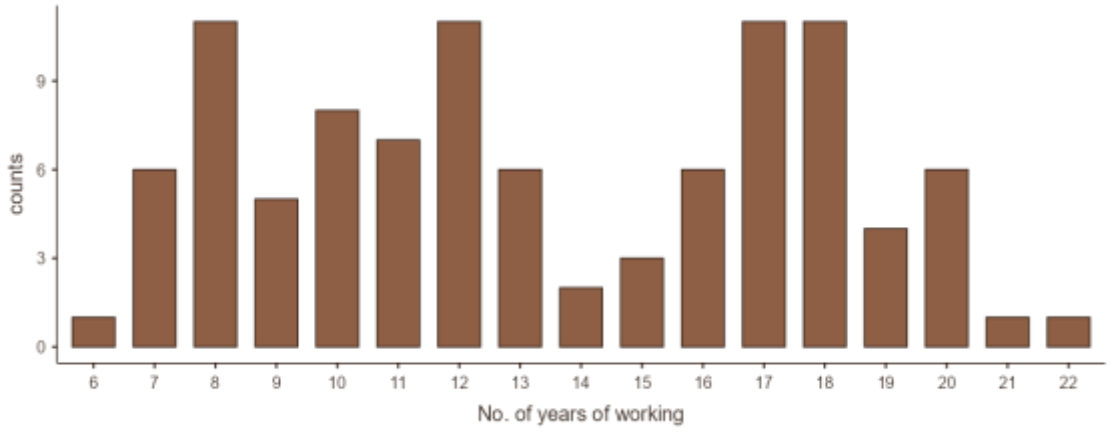
Interpretation: 79% of the participants did not use the armrest, while 21% made use of it.

Frequencies of the number of years of working

Table 6: Frequencies of the Number of Years of Working

No. of years of working	Counts	% of Total	Cumulative %
6	1	1.00%	1.00%
7	6	6.00%	7.00%
8	11	11.00%	18.00%
9	5	5.00%	23.00%
10	8	8.00%	31.00%
11	7	7.00%	38.00%
12	11	11.00%	49.00%
13	6	6.00%	55.00%
14	2	2.00%	57.00%
15	3	3.00%	60.00%
16	6	6.00%	66.00%
17	11	11.00%	77.00%
18	11	11.00%	88.00%
19	4	4.00%	92.00%
20	6	6.00%	98.00%
21	1	1.00%	99.00%
22	1	1.00%	100.00%

Figure 6: Frequencies of the Number of Years of Working Graph



Interpretation: 11% of the participants work for 8, 6, 17, and 18 years each. 8% work for 10 years. 7% work for 11 years. 6% work for 7, 13, 16, and 20 years each. 5% work for 9 years. 4% work for 19 years. 3% work for 15 years. 2% work for 14 years. 1% work for 6, 21, and 22 years.

Result

Statistical analysis was performed using SPSS version 26.0. The collected data were tabulated and summarised using descriptive statistics. Continuous variables such as age, pain percentage, disability percentage, and total SPADI percentage were expressed as mean, median, standard deviation (SD), minimum, and maximum values. Categorical variables, including gender, years of working, daily working hours, number and duration of rest breaks, and use of armrests, were presented in terms of frequency and percentage distribution. The mean age of participants was 38.6 ± 4.1 years, with a nearly equal spread of public and private sector bankers. The mean total SPADI percentage was 35.2 ± 16.5, indicating a moderate level of shoulder pain and disability among the participants. The mean pain percentage (39.9 ± 17.9) was higher than the mean disability percentage (32.3 ± 16.6), suggesting that discomfort was more pronounced than functional limitation. A majority of participants (69%) reported working 10 hours per day, with 92% taking only one rest break during their work schedule. Furthermore, 79% did not use armrests while operating the mouse, highlighting poor ergonomic practices. Females constituted 62 % of the sample, reflecting a slightly higher participation and possibly a higher reporting of musculoskeletal symptoms. Overall, the findings demonstrate a notable prevalence of mouse-related shoulder pain among bankers, predominantly associated with prolonged working hours, minimal rest breaks, and inadequate ergonomic support. These results fulfil the study's aim of identifying shoulder pain prevalence and support the need for ergonomic interventions and education among computer-based banking professionals.

Discussion

Mouse shoulder is an overuse musculoskeletal condition that arises primarily from prolonged computer mouse use and poor ergonomic posture. It is increasingly recognised as a form of occupational repetitive strain injury (RSI) that affects the shoulder complex, particularly among bankers, office workers, and professionals engaged in computer-based tasks for extended periods. The condition is characterised by pain, stiffness, and discomfort in the shoulder, upper arm, neck, and scapular regions. The pain typically results from repetitive micro-movements and static loading of the shoulder muscles—especially the deltoid, supraspinatus, and infraspinatus. Continuous reaching and unsupported arm positions lead to

sustained contraction of these muscles, causing microtrauma, tendon irritation, and inflammation over time. These biomechanical stresses, when combined with poor ergonomic practices such as improper desk height, absence of forearm support, or non-adjustable chairs, can lead to overuse injuries described as "mouse shoulder".

Pathophysiologically, prolonged computer usage causes muscle imbalance between the anterior and posterior shoulder girdle muscles, decreased scapular stability, and restricted glenohumeral joint mobility. These factors can contribute to rotator cuff tendinopathy, impingement syndrome, or even postural deviations such as rounded shoulders and forward head posture. Ergonomic factors play a crucial role in the development of the mouse shoulder. Improper desk height, lack of armrest support, non-neutral wrist position, and insufficient rest breaks increase mechanical strain on the upper limb. Psychological factors such as work stress, mental fatigue, and time pressure may further exacerbate muscle tension and pain perception. The risk of developing mouse shoulder in the banking profession is particularly high due to the nature of work and the occupational ergonomics involved. Bankers often spend long hours performing computer-based tasks, such as data entry, financial analysis, online transactions, and digital record keeping, which require constant use of the keyboard and mouse. This repetitive and sustained activity places continuous strain on the shoulder and upper limb muscles. Prolonged sitting in fixed postures, often with inadequate back and arm support, leads to static loading of the shoulder girdle, thereby predisposing individuals to musculoskeletal pain and dysfunction.

Furthermore, the banking work environment is typically characterized by limited physical activity and rest breaks, particularly in private sector settings where performance targets and customer interactions are time-bound. The use of non-ergonomic workstations, improper desk and monitor height, and a lack of awareness about correct posture can further aggravate mechanical stress on the shoulders and neck. Over time, these factors contribute to microtrauma and fatigue of the rotator cuff and scapular stabilizer muscles, resulting in pain, restricted mobility, and reduced functional capacity. Bankers with long working hours on a computer without armrests are particularly more prone, as their occupational tasks demand frequent and precise mouse movements. This encourages poor postural habits, such as protracted shoulders and a forward neck, which further compromise the shoulder's biomechanics. The results in the present study indicated a positive correlation between years of working and shoulder pain intensity, suggesting that bankers with longer occupational tenure experienced greater levels of discomfort and functional limitation in the shoulder region. The study conducted by Pieter Coenen et al. (2019) showed the frequency of screen work (that is, computer, keyboard, and mouse use, assessed using self-reports or software recordings) and musculoskeletal symptoms (that is, neck/shoulder complaints)[2]. The present study showed that the bankers who engage in more than 8-10 hours of daily computer use are significantly more prone to shoulder and neck disorders compared to those with shorter screen time. The study conducted by Luna Kiran Adhikari et al. (2023) showed that the annual prevalence of Musculoskeletal disorders was 82.5% [6].

Studies have shown that professionals who engage in more than 8-10 hours of daily computer use are significantly more prone to shoulder and neck disorders compared to those with shorter screen time. Among bankers, both public and private sector employees face this risk, though differences in workload, job demands, and ergonomic practices may influence symptom severity. The strong correlation between computer usage duration, absence of rest periods, and high SPADI scores indicates that mouse shoulder is an emerging occupational health concern in the banking sector. The mean SPADI score indicated mild to moderate levels of pain and functional limitation, with 51% of participants demonstrating SPADI values

above 30%, reflecting moderate or higher disability levels. These findings suggest a considerable burden of shoulder discomfort among banking professionals who spend prolonged hours performing computer-based tasks.

Hence, identifying the prevalence and contributing factors of mouse shoulder among bankers is crucial for promoting workplace ergonomics and designing preventive physiotherapy interventions, such as ergonomic workstation adjustments, regular stretching routines, and awareness programs to reduce musculoskeletal strain and improve occupational health outcomes.

Therefore, this study was undertaken to inspect the prevalence of mouse shoulder among public and private sector bankers in Pune, Maharashtra. 100 bankers between the ages of 30 and 45 years participated in the study, with a mean age of 38.65 years. A banker commonly experiences psychological stress like workload pressure, customer interaction, job security concerns, long working hours, etc., and physical stress like sedentary work, repetitive movements, and lack of physical activity. Physical stress on the shoulder joint is observed more when the bankers are not using an armrest. The shoulder joint (glenohumeral joint) is under a large impact of gravitational force when the arm is unsupported; gravity pulls it downward, creating a traction (pulling) force at the shoulder joint. Muscular forces actively contract to hold the arm up, stabilise the shoulder, and allow precise hand movement on the mouse. This isometric contraction (holding without movement) causes muscle fatigue over time. Overactive muscles include the upper trapezius, levator scapulae, supraspinatus, deltoid (especially the upper fibres), and rhomboids. Joint reaction forces within the shoulder joint act to counterbalance gravity and muscle pull. This leads to compression and shear forces on the glenohumeral joint and surrounding structures.

Conclusion

The study identifies a high prevalence of shoulder pain among bankers, which suggests that prolonged computer use and poor ergonomic practices contribute significantly to the development of mouse shoulder. The use of an armrest proves to be a protective measure, indicating low SPADI scores. Early ergonomic interventions, workplace modifications, and awareness programs can play an important role in lowering the prevalence of shoulder pain and other musculoskeletal disorders in bankers.

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