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Occupational health and postural discomfort faced by bankers due to computer usage

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Abstract

In today's world, due to increase of information technology and daily increase of computer usage in banking sector and increase use of online services in banks, there is a need of research in computer work related musculoskeletal disorders and health problems related to it. Prolonged sitting in banking sector is injurious for health. This research paper aimed to know the level of occupational health and postural discomfort faced by the bank employees during the performance of work. In this study, results revealed that maximum number of respondents faced muscle and joint problems resulting from prolonged static posture at work scored rank I with mean score (2.13). Heavy discomfort was felt in the neck (WMS – 3.84) followed by lower back (WMS - 3.74), wrists (WMS - 3.64), head (WMS – 3.53), lower arms (WMS- 3.30), upper arms (WMS- 3.17) and shoulder (WMS- 3.06). Bank employees due to excessive workload were unaware about the proper working posture on computer which cause pain in neck and other parts of the body. So, to reduce the prevalence of computer work related musculoskeletal disorders, it is important to promote awareness of various risk factors associated with it and educate them to adopt good and comfortable posture.

Keywords: bank, computer, discomfort, MSDS, problems, posture, work

1. Introduction

In banking sector, computer are an integral part of life and no one need specialized training to use it. In every sphere of life, rapid use of computers has changed the work environment drastically. At present time, paper work is replaced by computer based work which directly affect the both employees and workplace and now computer becomes a basic need for many of the different jobs and activities. In banking sector, many of the bank employees experience physical health problems due to prolonged computer usage because workload is very high in banks. To finish the work on computer, they have to spend 6 to 8 hours in banks and do repetitive tasks for the whole day in an static position. Long periods of using a computer can increase the chance of vision related problems. Akinbinu and Mashalla (2014) ^[1] revealed that the employees who spent six to eight hours on computers daily having high computer vision syndrome then those employees who used computers for six hours daily. In banks, bank employees mostly complain about the posture- related injuries. Maximum of the bank employees faced muscle and joint problems resulting from prolonged static posture headache and body fatigue, pain, swelling, stiffness of joints, weakness and numbness in arms and hands occurs due to improper sitting, lack of short breaks during work and improper viewing distance. Such types of problem arises due to poorly designed workstation, bad posture and sitting for extended periods of time. Although sitting for long periods of time requires less muscular effort than standing. It still causes physical fatigue due to excessive workload and need to hold parts of the body for long periods of time. And extended work for prolonged period of time can adversely affect not only vision but also cause back and neck pain, arm and shoulder pain injuries and cervical pain, leading to visual and muscular fatigue and discomfort. Sulainman *et al.* (2015) ^[8] stated that lower and upper back pain and muscles pain could be due to incorrect seating, which also affects the cervical spine and neck muscles that leading to pain. Around 47.77 percent of total employees had slightly twisted posture while work. Apart from this, it reduces the circulation of blood to muscles, bones, tendons and ligaments. Work related musculoskeletal disorders also known as cumulative trauma disorders, are a group of health problems caused by overuse of muscles, bones, tendons and ligaments and which may leads to long term disability. Work related musculoskeletal disorders are a combination of factors such as repetitive task, fixed posture and duration of task with insufficient recovery time-inadequate rest breaks.

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In computer handling, duration of total work, nature of job, types of computer used and its placement are to be considered.

Postural discomfort is very common problem in all working sectors specially in banks where several bank employees/bankers do tedious job for long hours in static position in front of computers without taking breaks. And their working postures and steady positions can put stress on muscles and joints that leads to severe health problems. That's why computer work related musculoskeletal disorders affect millions of bank employees which are on different designation. If they follow proper and good postures for prolonged period of time then it will affects the whole process of work and condition of bank employees. Also, for designing any type of workstation, ergonomics play an important role for enhancing the efficiency and productivity of the employees. A proper working good posture is now a days becomes a basic need among all the working sectors, specially in banks to perform several tasks in front of computers in a better way. Therefore, the main aim of our research was to know the level of occupational health and postural discomfort faced by the bank employees during the performance of work.

2. Methodology

The sample size of 30 respondents was randomly selected from Hisar district in Haryana state. Out of which 18 were males and 12 were females. The survey asked a number of questions related to personal and demographic profile of the respondents, musculoskeletal pain and discomfort in different body parts using BPDS while working on computer, work related health symptoms experienced by bankers, posture related problems faced by bankers, computer working techniques followed by bankers for adopting a good and comfortable posture.

Muskuloskeletal discomfort during work was assessed through Human Body Map (Corlett and Bishop, 1976) [4].

2.1 Human Body Map: It is used to measure the localized discomfort, musculoskeletal discomfort and intensity of pain in different body parts resulting from the postural discomfort. Body part discomfort score is obtained using modified Human Body Map given by Corlett and Bishop, 1976 [4]. In this technique body is divided into a number of regions. After performing the work, respondents are asked to indicate discomfort in body parts on 5- point continuum ranging from 1-5 i.e. very mild (1), mild, (2), moderate (3), severe (4) and

very severe discomfort (5). The weighted mean scores (WMS) is calculated to reach at the conclusion.

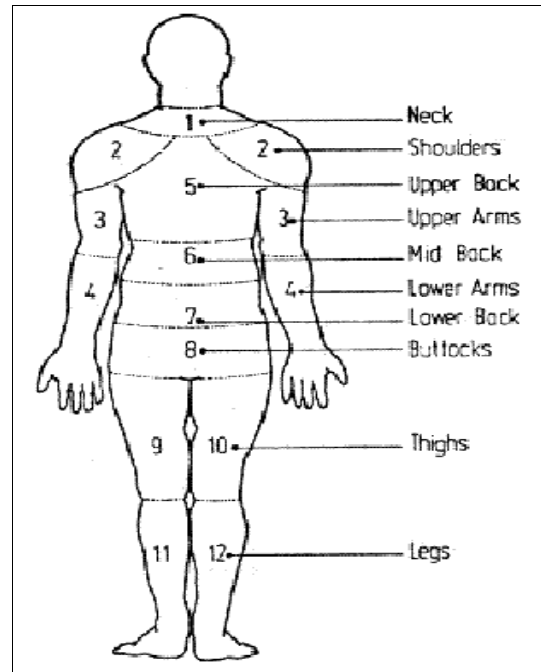


Fig 1: Human Body Map

3. Results

The results obtained on various aspects are described under following heads:

3.1 Demographic profile of the respondents

The data reported in Table 1 indicates that more than half of the respondents (53.3%) belonged to 20-30 years of age followed by age group in 31-40(46.6%) and only 16.6% were in 41-50 years and above 51years of age group. Majority of respondents, 60.0% were males and 40.0% were females. Respondents had more than 6 years work experience were 53.3% followed by work experience in 5-6years (26.6%), 3-4years (13.3%) and only 6.6% respondents had 1-2 years work experience. About 40.0% of the respondents were in the designation of officer level in the present study. And 40.0% of respondents spent 7-8 hours in front of computer followed by 33.3% spent 5-6 hours and 26.6% spent more than 8 hours in front of computer.

Table 1: Demographic profile of the respondents

(N=30)

Sr. No.	Variables	Categories	Frequency (F)	Percentage (%)
1.	Age (in years)	20-30	16	53.3
		31-40	14	46.6
		41-50	5	16.6
		Above 51	5	16.6
2.	Gender	Male	18	60.0
		Female	12	40.0
3.	Working years	1-2 Years	2	6.6
		3-4 Years	4	13.3
		5-6 Years	8	26.6
		>6 Years	16	53.3
4.	Designation	Clerical level	8	26.6
		Officer level	12	40.0
		Manager level	10	33.3
5.	Time spend in front of computer	5-6 Hours	10	33.3
		7-8Hours	12	40.0
		>8 Hours	8	26.6

3.2 Musculoskeletal pain and discomfort in different body parts

Table 2 illustrates the pain and discomfort level felt by the bankers in different body parts while doing the work in front of computer. Weighted mean score of pain and discomfort of different body parts were mentioned according to severity basis. Heavy discomfort was felt in the neck (WMS – 3.84) followed by lower back (WMS - 3.74), wrists (WMS - 3.64), head (WMS – 3.53), lower arms (WMS- 3.30), upper arms (WMS- 3.17) and shoulders (WMS- 3.06). Moderate discomfort was found in mid back (WMS – 2.63), upper back (WMS – 2.46), Thighs (WMS – 2.18) and knees (WMS -2.10) whereas, light discomfort was felt in the buttocks (WMS – 1.86), legs (WMS- 1.73) and feet (WMS - 1.24) respectively. The similar results were observed by Akrouf *et al.* (2010) who revealed that most affected body parts were the neck (53.5%), lower back (51.1%), shoulders (49.2%) and upper back (38.4%) respectively. Another study by Oha *et al.* (2014) also concluded that pain was experienced mostly by the respondents in the neck (51%) and followed by low back pain (42%), wrist/hand pain (35%) and shoulder pain (30%).

Table 2: Musculoskeletal pain and discomfort in different body parts using BPDS

(N=30)			
Sr. No.	Body parts	WMS	Ranks
1.	Head	3.53	IV
2.	Neck	3.84	I
3.	Shoulders	3.06	VII
4.	Upper arms	3.17	VI
5.	Lower arms	3.30	V
6.	Wrists	3.64	III
7.	Upper back	2.46	IX
8.	Mid back	2.63	VIII
9.	Lower back	3.74	II
10.	Buttocks	1.86	XII
11.	Thighs	2.18	X
12.	Knees	2.10	XI
13.	Legs	1.73	XIII
14.	Feet	1.24	XIV

Table 4: Posture related problems faced by the bankers due to use of computer

Sr. No.	Posture-related problems	Mild (1)	Moderate (2)	Severe (3)	Weighted mean score	Rank
1	Cervical Pain	18	12	0	1.4	VII
2	Long duration of work cause headache and body fatigue	12	8	10	1.93	II
3	Feel tiredness due to excessive workload	14	10	6	1.73	V
4	Unhealthy seating or poor workstation (desk) design cause back and neck pain, arm and shoulder pain injuries	18	8	4	1.53	VI
5	Pain, Swelling, stiffness of joints, weakness and numbness in arms and hands	14	6	10	1.86	III
6	Prolonged static posture cause muscle and joint problems	12	8	12	2.13	I
7	Long seating on computer leads to burning eyes	15	10	30	1.83	IV

3.5 Computer working techniques followed by bankers for adopting a good and comfortable posture

Data presented in table 5 indicated that out of 30 respondents, 66.6% of the respondents had place their thighs parallel to the floor, shoulder relaxed when keying and using the mouse, wrists straight all the times and hands in line with their forearms, did take breaks from keying or mousing every 30-45 minutes followed by elbows should be at approximately

3.3 Work related vision symptoms experienced by bankers after finishing the work on computer

As perusal of Table 3 elucidates that most of the respondents (66.6%) reported eye irritation followed by watery eyes (60.0%), eye strain (50.0%), eye fatigue (50.0%), blurred vision (33.3%) and dryness of eyes (26.6%) respectively. Chavhan *et al.* (2020) in her study highlights that 58.43% of the respondents experienced more common visual symptoms were irritation of eyes (32.88%), watering of eyes (26.17%) and burning of eyes (22.81%).

Table 3: Work related vision symptoms experienced by bankers

Sr. No.	Work related vision symptoms	Variables	
		Yes F (%)	No F (%)
1.	Blurred Vision	10(33.3)	20(66.6)
2.	Eye strain	15(50.0)	15(50.0)
3.	Eye fatigue	15(50.0)	15(50.0)
4.	Eye irritation	20(66.6)	10(33.3)
5.	Watery eyes	18(60.0)	12(40.0)
6.	Dryness of eyes	8(26.6)	22(73.3)

3.4 Posture related problems faced by the bankers due to use of computer

The findings in table 4 indicated that majority of the respondents faced muscle and joint problems resulting from prolonged static posture at work scored rank I with mean score (2.13), long duration of work cause headache and body fatigue is rank II with mean score (1.93), pain, swelling, stiffness of joints, weakness and numbness in arms and hands is rank III with mean score (1.86), long seating on computer leads to burning eyes is rank IV with mean score (1.83), feel tiredness due to excessive workload is rank V with mean score (1.73), unhealthy seating or poor workstation (desk) design cause back and neck pain, arm and shoulder pain injuries is rank VI with mean score (1.53) and cervical pain is rank VII with mean score (1.53). Gangopadhyay *et al.* (2003) stated that prolonged work activity, high repetitiveness and remaining in static position for long period of time may increase the risk of cumulative trauma disorder (CTD). Another study by Sangwan *et al.* (2005) stated that incorrect body posture for long duration may cause tiredness and fatigue that may lead to permanent damage of the body.

the same height as the keyboard, fingers and wrists in neutral or straight alignment when typing, monitor should be at a comfortable reading distance and height(60.0%), forearms should be supported and shoulders relaxed at all times(53.3%), feet should lay flat on the floor or on a footrest (46.6%) and only (40.0%) of respondents lower and mid back would be well supported for adopting a good and comfortable posture.

Table 5: Computer working techniques followed by bankers for adopting a good and comfortable posture

Sr. No.	Computer working techniques	Yes F(%)	No F(%)
1	Thighs should be parallel to the floor	20 (66.6)	10 (33.3)
2	Feet should lay flat on the floor or on a footrest	14 (46.6)	16 (53.3)
3	Lower and mid back should be well supported	12 (40.0)	18 (60.0)
4	Forearms should be supported and shoulders relaxed at all times	16 (53.3)	14 (46.6)
5	Elbows should be at approximately the same height as the keyboard	18 (60.0)	12 (40.0)
6	Wrists should be straight at all times and your hands in line with your forearms	20 (66.6)	10 (33.3)
7	Monitor should be at a comfortable reading distance and height	18 (60.0)	12 (40.0)
8	Shoulder relaxed when keying and using the mouse	20 (66.6)	10 (33.3)
9	Fingers and wrists in neutral or straight alignment when typing	18 (60.0)	12 (40.0)
10	Breaks from keying or mousing every 30-45 minutes	20 (66.6)	10 (33.3)

4. Discussion

In this study, more than half of the respondents (53.3%) belonged to 20-30 years of age group. And 60.0% were males and 40.0% were females who participated in this study. And 40.0% and 40.0% of respondents spent 7-8 hours in front of computer, followed by 33.3% spent 5-6 hours and 26.6% spent more than 8 hours in front of computer.

There are many studies proving that various type of musculoskeletal problems among respondents occur due to poor posture which they adopt during their course of work and there are many reasons behind this, such as static posture, long working hours, long seating on computer due to excessive workload. The present study results showed that while doing the work in front of the computer, majority of the respondents felt heavy discomfort in the neck (WMS – 3.84) followed by lower back (WMS - 3.74), wrists (WMS - 3.64), head (WMS – 3.53), lower arms (WMS- 3.30), upper arms (WMS- 3.17) and shoulder (WMS- 3.06). Moderate discomfort was found in mid back (WMS – 2.63), upper back (WMS – 2.46), thighs (WMS – 2.18) and knees (WMS -2.10) whereas, light discomfort was felt in the buttocks (WMS – 1.86), legs (WMS- 1.73) and feet (WMS - 1.24) respectively. In case of work related vision symptoms, most of the respondents (66.6%) reported eye irritation followed by watery eyes (60.0%), eye strain (50.0%), eye fatigue (50.0%), blurred vision (33.3%) and dryness of eyes (26.6%) respectively.

In posture- related problems, a large number of respondents faced muscle and joint problems resulting from prolonged static posture at work scored rank I with mean score (2.13), long duration of work cause headache and body fatigue is rank II with mean score (1.93), pain, swelling, stiffness of joints, weakness and numbness in arms and hands is rank III with mean score (1.86), long seating on computer leads to burning eyes is rank IV with mean score (1.83), feel tiredness due to excessive workload is rank V with mean score (1.73), unhealthy seating or poor workstation (desk) design cause back and neck pain, arm and shoulder pain injuries is rank VI with mean score (1.53) and cervical pain is rank VII with mean score (1.53).

For adopting a good and comfortable posture, about 66.6% of the respondents follow the computer working techniques and

had placed their thighs parallel to the floor, shoulder relaxed when keying and using the mouse, wrists straight all the times and hands in line with their forearms, did take breaks from keying or mousing every 30-45 minutes followed by elbows should be at approximately the same height as the keyboard, fingers and wrists in neutral or straight alignment when typing, monitor should be at a comfortable reading distance and height (60.0%), forearms should be supported and shoulders relaxed at all times(53.3%),feet should lay flat on the floor or on a footrest (46.6%) and only (40.0%) of respondents lower and mid back would be well supported respectively.

5. Conclusions

Based on the findings of results, this study reveals that high prevalence of musculoskeletal disorders found in the neck, lower back, wrists, head, lower arms, upper arms and shoulder followed by mid back, upper back, thighs and knees but least in buttocks, legs and feet/ankles. In the present study it was found that most of the respondents (66.6%) reported eye irritation. In posture- related problems, majority of the respondents faced muscle and joint problems resulting from prolonged static posture at work scored rank I followed by long duration of work cause headache and body fatigue is rank II, pain, swelling, stiffness of joints, weakness and numbness in arms and hands is rank III, long seating on computer leads to burning eyes is rank IV, feel tiredness due to excessive workload is rankV, unhealthy seating or poor workstation (desk)design cause back and neck pain, arm and shoulder pain injuries is rank VI and cervical pain is rank VII. And in case of computer working techniques,66.6% of the respondents had placed their thighs parallel to the floor, shoulder relaxed when keying and using the mouse, wrists straight all the times and hands in line with their forearms, did take breaks from keying or mousing every 30-45 minutes for adopting a good and comfortable posture. It is recommended that awareness programmes regarding prolong sitting in the form of workshops, training and compaigns regarding ergonomic techniques for adopting a good and comfortable posture while working on computer and suggest some different muscle stretching exercises during break which gives rest and relaxation in the working hours of bank

employees. And to get more good and accurate results larger sample size can be taken up.

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