Original Article

"Prevalance of Neck Pain in Computer Users"

Faiza Sabeen,[1] **Muhammad Salman Bashir,**[2] **Syed Imtiaz Hussain,**[3] **Sarah Ehsan**[4]

Abstract

Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain. Neck pain and computer users are clearly connected due to extended periods of sitting in a certain position with no breaks to stretch the neck muscles. Prolonged computer use with neck bent forward, will cause the anterior neck muscles to gradually get shorter and tighter, while the muscles in the back of neck will grow longer and weaker. These changes will lead to development of neck pain.

Objectives: To find incidence of neck pain in computer users, association between neck pain and prolong sitting in wrong posture, association between effects of break during prolong work, association between types of chair in use in prolong sitting and occurrence of neck pain.

Methodology: For this observational study data was collected through Questionnaires from office workers (computer users), and students.

Results: Out of 50 persons 72% of computer users had neck pain. Strong association was found between neck pain and prolonged computer use ($p = 0.001$). Those who took break during their work had less neck pain. No significant association was found between type of chair in use and neck pain. Neck pain and type of system in use also had no significant association.

Conclusion: So duration of computer use and frequency of breaks are associated with neck pain at work. Severe Neck pain was found in people who use computer for more than 5 hours a day.

Sabeen F.[1]
Physiotherapist, School of Allied Health Sciences Children Hospital, Lahore – Pakistan

Bashir M.S.[2]
Assistant Professor
Riphah College of Rehabilitation Sciences
Riphah International University, Lahore – Pakistan

Hussain S.I.[3]
Deputy Director / Assistant Professor
Riphah College of Rehabilitation Sciences
Riphah International University, Lahore – Pakistan

Ehsan S.[4]
Physiotherapist, School of Allied Health Sciences Children Hospital, Lahore – Pakistan

Introduction

Neck pain is a common problem for people who spend a great deal of time using computers. Neck pain is the pain experienced anywhere from the base of the skull at ear level to the upper part of the back or shoulder.[1,2]

Symptoms of neck pain can include general aches and pains that can be postural fatigue in the neck, shoulders, arms, or persistent pain or discomfort in soft tissues surrounding the neck and shoulders. An ideally aligned neck has a slight lordotic curvature that looks. Prolonged Computer use and sitting with rounded shoulders and faulty neck posture disturbs the normal lordotic curve of neck leading to muscular imbalance and consequently neck pain.

The long – term, lower intensity stresses and strains and improper postures are believed to be the most important causative factors for neck pain.[3] Duration of computer use, frequency of breaks, method of keyboard operation, and position of computer monitors, type and use of input devices are also associated with neck pain at work.[4] Reaching for mouse, too low monitor and leaning forward to operate the computer are some of the faults in workstations that can lead to development of neck pain.

Four to five hours of daily computer use is a noted risk factor for neck pain in adolescents.[(5)]Computer users with neck pain had reduced activity of the cervical extensor muscles and higher activity in the upper trapezius, compared to workers without neck pain.[6] The musculoskeletal changes that can be seen in computer users are forward head posture, hunched back and rounded shoulders.

Keeping the neck in proper alignment is very important in preventing neck pain. Taking mini-breaks or micro breaks of 30 seconds once every 20 to 40 minutes is an effective means to reduce neck pain at work and these short breaks have no adverse effect on worker productivity.[7]

Computer workstations should be arranged to maximize correct posture and reduce neck flexion with the use of document stands and screen height adjustments, appropriate chairs and supports.[8]

Methodology

Study Design

Observational study.

Sample Design

Convenience sampling.

Settings

Data was taken from office workers (computer users) and students.

Duration of Study

Three months after approval of synopsis.

Sample Size

Fifty computer users.

Sampling Technique

Convenient and Purposive Non Random Sampling technique was used.

Sample Selection Criteria

Inclusion Criteria

- Persons using computer more than 3 hours a day
- Age between 20-45 years

Exclusion Criteria

All other persons who were not fulfilling the above mentioned criteria were excluded. Participants were excluded if they had any specific medical condition affecting the cervical spine (such as ankylosing spondylitis, tumors, infection, and rheumatoid arthritis).

Methodology

Information regarding neck pain and computer usage was collected through questionnaires. It included:

- Individual demographic characteristics.
- Work environment factors.
- Total duration of daily sitting at work.
- Frequency of breaks from sitting.
- postural care.

Statistical Analysis

Using SPSS v.17 the data was managed and analyzed. The continuous variables were expressed as mean S.D. whereas categorical variable were expressed in the form of frequency table and percentages. The Histogram was also used to see the normality of quantitative data. Chi-square test was applied to determine any association between variables. Appropriate graphs were used to display the data. A p-value less than 0.05 was taken as significant.

Results

This observational study was based on 3 months' time period. Following are the results of statistical analysis.

- All of the persons were between 20 – 45 years of age and their computer usage was more than 3 hours a day.
- Incidence of neck pain in computer users was very high i.e. 72%.

PERFORMA FOR DATA COLLECTION

1. Study Serial No. _____ 2. Date of Assessment _____

3. Name _____ 4. Age _____

5. Gender: Male ☐ Female ☐

6. Address _____

7. Contact No. _____

8. Socioeconomic Status: Upper ☐ Middle ☐ Lower ☐

9. Occupation: Banker Receptionist ☐ Computer Operators ☐ Student ☐

10. Which Type of System is in Use?

Desktop ☐ Laptop ☐ Notebook ☐

11. No. Of Hours of Daily Computer Use:

3 – 4 ☐ 4 – 5 ☐ 5 – 6 ☐

12. History of Neck Pain: Yes ☐ No ☐

13. Nature of Pain: Localized ☐ Radiating ☐

14. Any Knowledge of Posture Care and Precautions:

Yes ☐ No ☐

15. If Yes, Then Do You Practice That?

Yes ☐ No ☐

16. Any Other Thing Related To This Problem?

Yes ☐ No ☐

17. If Yes,
Please Specify _____

Consent _____

- Out of 50 persons, 58% people use computer more than 5 hours.
- Out of which 27.7% had radiating pain and 72.3% had localized pain in neck.
- Fifty two percent of them did not take any break during their work.
- Ninety two percent of them used back support chair whereas remaining 8% had additional head support.
- Seventy six percent of them used desktop and 24% used laptops and other.
- Significant association was found between neck pain and prolong computer use ($p = 0.001$).
- Significant association was found between neck pain and not taking any break during work ($p = 0.001$).
- No significant association was found between types of chair in use in prolong sitting and occurrence of neck pain ($p = 0.889$).
- No association was found between neck pain and type of computer system in use ($p = 0.076$).

As the p value is less than 0.05, so it indicates that there is significant relationship between neck pain and prolong computer use.

Table 1: Descriptive measure of age.

Age	Mean ± S.D	23.5 ± 3.52
	Minimum	20
	Maximum	40

Table 2: Frequency of Socioeconomic status.

Socioeconomic Status	Frequency	Percentage
Upper	3	6
Middle	45	90
Lower	2	4

Table 3: Frequency distribution of gender.

Gender	Frequency	Percentage
Male	28	56
Female	22	54

Table 4: Occupation.

Occupation	Frequency	Percentage
Banker	9	18.0
Receptionist	3	6.0
Computer operator	10	20.0
Student	28	56.0

Table 5: Type of computer system in use.

Type of System in Use	Frequency	Percentage
Desktop	38	76%
Laptop	11	22%
Notebook	1	2%

Table 6: Type of chair in use during work.

Type of Chair in Use	Frequency	Percentage
Back support	46	92%
Back support + head support	4	8%

Table 7: Breaks taken during work.

Do You Take Any Break During Work	Frequency	Percentage
Yes	24	48%
No	26	52%

Table 8: Number of hours of daily computer use.

Number of Hours of Daily Computer Use	Frequency	Percentage
3 – 4	12	24%
4 – 5	9	18%
5 – 6	29	58%

Table 9: Occurrence of neck pain.

Do You Have Neck Pain	Frequency	Percentage
Yes	39	78%
No	11	22%

Table 10: Nature of neck pain.

What is the Nature of Pain	Frequency	Percentage
Localized	18	72.7%
Radiating	10	27.7%

Table 11: Knowledge of posture care

Do You Have Any Knowledge of Posture Care and Precautions	Frequency	Percentage
Yes	25	50%
No	25	50%

Table 12: Association between neck pain and computer use.

Number of Hours of Daily Computer Use	Do You Have Neck Pain		Total
	No	Yes	
3 – 4	8	4	12
4 – 5	3	6	9
5 – 6	3	26	29
Total	14	36	50

Table 13:

	Value	Df	Asymptomatic Sig. (2 – Sided)
Pearson Chi-Square	13.510	2	.001

Table 14: Association between neck pain and effect of break during work.

Do You Take Any Break During Work	Do You Have Neck Pain		Total
	No	Yes	
Yes	12	12	24
No	2	24	26
Total	14	36	50

Table 15:

	Value	df	Asymptomatic Sig. (2 – Sided)
Pearson Chi-Square	11.081	1	.001

Table 16: Association between neck pain and type of chair in use.

Type of Chair in Use	Do You Have Neck Pain		Total
	No	yes	
Back support	13	33	46
Back support + head support	1	3	4
Total	14	36	50

Table 17:

	Value	Df	Asymptomatic Sig. (2 – Sided)
Pearson Chi-Square	.019	1	.889

Table 19: Association between neck pain and type of computer in use.

Type of System in Use	Do You Have Neck Pain		Total
	No	Yes	
Desktop	8	30	38
Laptop	5	6	11
Notebook	1	0	1
Total	14	36	50

Table 20:

	Value	Df	Asymptomatic Sig. (2 – Sided)
Pearson Chi-Square	5144	2	.076

As the p value is less than 0.05, so it indicates that there is significant relationship between neck pain and break during work.

As the p value is greater than 0.05, so it indicates that there is not any significant relationship between neck pain and type of chair in use during work.

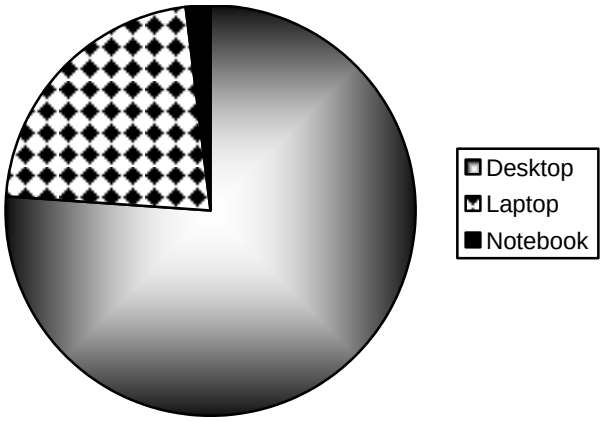

Fig. 1: Type of System in Use.

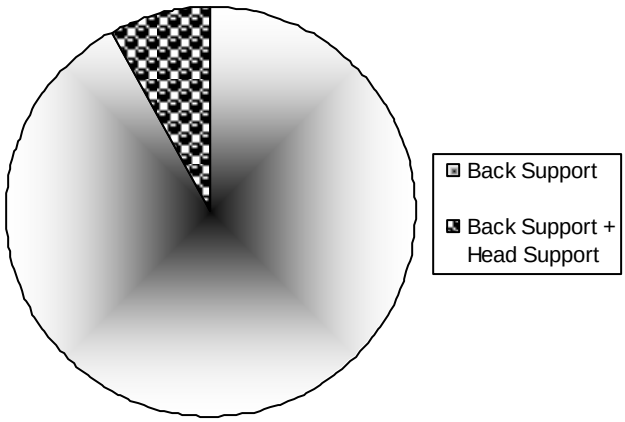

Fig. 2: Type of Chair in Use.

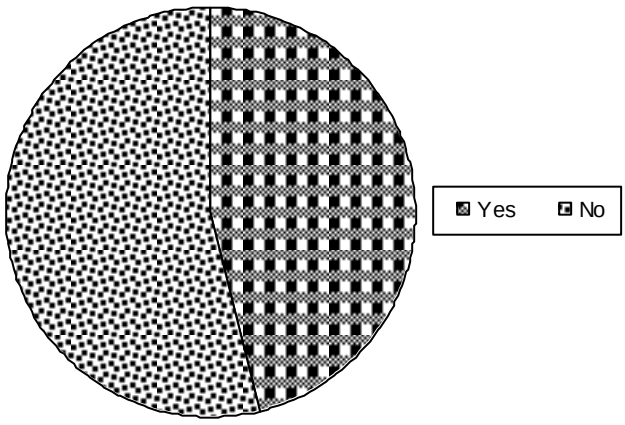

Fig. 3: Do You Take Any Break during Work.

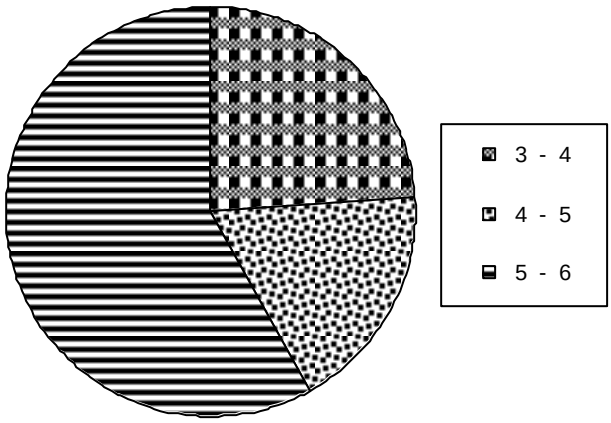

Fig. 4: Number of Hours of Daily Computer Use.

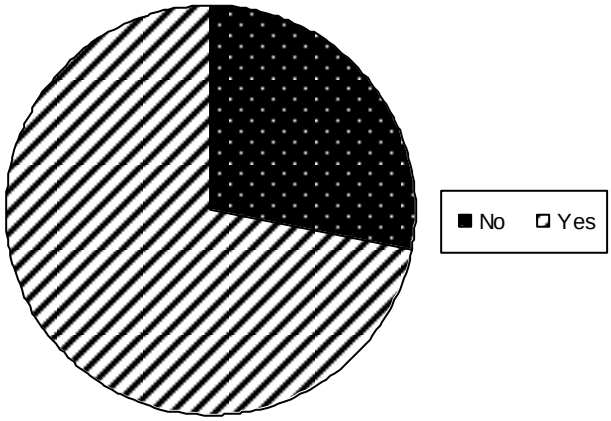

Fig. 5: Do You Have Neck Pain.

As the p value is greater than 0.05, so it indicates that there is not any significant relationship between the neck pain and type of computer in use during work.

Discussion

The purpose of this study was to find the incidence of neck pain in prolong computer users and to find association between neck pain and computer use, between neck pain and break during work, between neck pain and type of chair in use, and between neck pain and type of system in use.

Computers have become a necessity during the past few years. Its use is increasing enormously in office workers and students. Previous Researchers who investigated the relationship of activity and neck pain found that being passive during leisure time (e.g.,

watching television) was associated with an increased prevalence of neck pain. Being physically active during leisure time reduces the chances of experiencing neck pain. Frequent micro breaks of 30 seconds once every 20 to 40 minutes were an effective means to reduce neck pain and that these micro breaks had no adverse effect on worker productivity.

Primary prevention reduces the incidence of disease and is directed toward susceptible people before they develop a disorder. With this in mind, engaging computer users in physical activity as part of their work day would likely be an appropriate primary prevention strategy. Encouraging participation in active leisure activities may have the greatest effect in sedentary workers. Physical activity may facilitate mechanical and metabolic processes that are health enhanceing or healing for musculoskeletal tissues.

Ensuring that computer workstations are arranged to reduce neck flexion (use of document stands, screen height, etc.), use of appropriate chairs, and using rest breaks may help to prevent neck pain. Secondary prevention is usually geared toward preventive measures for people in a population who have developed a disease, yet remain asymptomatic. Tertiary prevention is directed at preventing disability in people who have a symptomatic disease in an effort to prevent disease progression or to offer rehabilitation.

Providing ergonomic counseling to computer users with neck pain may help to reduce morbidity associated with the disorder. The use of neck muscle exercises may be a useful tertiary prevention approach to reduce morbidity and to rehabilitate workers.

Conclusion

Incidence of neck pain is very high with prolonged computer usage. Duration of computer use and frequency of breaks are associated with neck pain at work. Severe Neck pain was found in people who use computer for more than 5 hours a day.

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