International Journal of Yoga, Physiotherapy and Physical Education
ISSN: 2456-5067; Impact Factor: RJIF 5.24
Received: 02-01-2019; Accepted: 03-02-2019; Published: 10-01-2020
www.sportsjournal.in
Volume 5; Issue 1; 2020; Page No. 08-12

Prevalence of cervical pain on computer workers in Parul University

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Abstract
Background: To know the prevalence of cervical pain among computer workers.
Aims and Objectives
AIMS: To evaluate the prevalence of cervical pain of computer workers in parul university.
Objectives:
- To Determine the Cervical Pain Among Computer Workers.

Material and Methodology
Material Used:-
- Demographic Data
- Questionnaires
- Paper
- Pencil/Pen

Methodology:-
Source of Data: 50 Parul University Computer Workers.
Study Design: Observational Analytical Study.
Sample Size: In This 50 (N=50) Parul University Computer Workers.
Study Population: Parul University Computer Workers.
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 mention criteria they were excluded.
- Participants were excluded if they had any specific medical condition affecting the cervical spine.

Outcome Measures
- Performa For Data Collection
- Neck Disability Index (NDI)
- Numeric Pain Rating Scale (NPRS)

Procedure: In the observational study, we had taken population age ranging from 20 to 45 years we had taken both population male and female population Survey was done by filling a questionnaire form. Observational and analytical study was done using NDI for detecting functional limitation of patient with cervical pain. Numerical pain rating scale was taken to evaluate the pain in patients who have neck pain. After filling a questionnaire we had scoring for both the scales individually. On the basis of scoring we made a conclusion on the basis of data we had obtained from the neck disability index and numeric pain rating scale.
Result: The result of study shows mean NDI score was 25.92 and SD was 16.14. The mean working hour of computer worker is 5.06 hours. The study shows 56% computer workers have neck disability and 14% and 4% have moderate and severe neck disability respectively.
Conclusion: The studies concluded that the incidence of neck pain and disability is high with prolong use of computer.

Keywords: neck disability index, numerical pain rating scale, computer workers, activity of daily living, cervical pain

Introduction

The cervical section of the spine consists of seven vertebrae (C1–C7) and six intervertebral discs, and extends from the base of the skull to the top of the trunk, where the thoracic vertebrae and rib cage start. The cervical spine's major functions include supporting and cushioning loads to the head/neck while allowing for rotation, and protecting the spinal cord extending from the brain [1].

Each intervertebral disc is a complex structure comprised of three main components, a thick outer ring of fibrous cartilage called the annulus fibrosus, a more gelatinous core Called the nucleus pulposus, and the cartilage vertebral endplates. The intervertebral discs are the among the largest avascular tissues within the body, due to the lack of vessel penetration throughout the internal sections [2].

Neck pain is very common in society, particularly in office workers. By defining the pain," pain is Associated with tissue injury and capability to identify pain sensations". This pain and disability is due to the pressure of socioeconomic problems, especially reimbursement to which involves the injuries. Cervical pain involving skull and neck zone was the outcome of mechanical syndrome [3].

Causes

- Postural strain
- Desk setup
- Monitor setup
- Proper office chair
- Stress

Affected group of population are 20% most common neck pain occurred in the condition are in age 16-34yrs.

Neck pain is very common and most of us will have it at some point in our lives. Usually, neck pain is result of holding your neck in same position for too long. Other things also cause neck pain:

Worry and stress

Sleeping awkward

Sprain or strain

Cervical spondylosis

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. Pro-longed 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.

Sign and Symptoms

- Pain and stiffness
- Numbness or tingling
- Clicking and grating noise
- Dizziness and blackouts
- Muscle spasm

Work-related musculoskeletal disorders are injuries or disorders of musculoskeletal tissues associated with workplace risk factors and are known by a variety of terms, including cumulative trauma disorders, repetitive strain injuries, and overuse injuries. For people who spend a great deal of time using computers, of the neck are a common problem. The term work-related neck pain is employed in this article; "computer" refers to desktop and laptop or notebook personal computers, video display units, and video display terminals, to include the use of keyboards and pointing devices.

Neck pain is defined in this paper as pain experienced from the base of the skull (occipital) to the upper part of the back and extending laterally to the outer and superior bounds of the shoulder blade (scapula). Epidemiological evidence appropriate to WRNP associated with computer use is reviewed; individual, social, behavioural, and psychological issues relevant to WRNP are presented; and preventive and health policy strategies that may be considered to assist in controlling the problem of WRNP are suggested.

The Neck Pain Disability Index is a questionnaire is commonly is used in clinical trials to measure the functional status of patients with neck pain. The NDI was originally developed for assessing the functional status of patients with disabling neck pain, particularly whiplash associated disorders. The psychometric properties of the NDI, in terms of validity and reproducibility, is still topic of research, which also counts for how to interpret change scores [4].

Numerical rating scale (NRS) is not the same as a VAS. The NRS is based on discrete values, rather than continuous, which makes it more similar to a Likert-type scale. The discrete values are the digits 0-10, although scales with 21-101 points have been described, the additional numbers do not appear to offer additional value. The advantage of a NRS is that there is no measurement involved and having exactly a 10 cm line is not critical. Also, the NRS may possibly be more intuitive. The potential disadvantage is that the NRS may not be as sensitive as a VAS, since it is limited to discrete values. Also, patients may tend to remember values which may impact its utility. In the investigation of a NRS in the form of a line with 20 units demarcated on it, it was reported that there was a significant tendency to select the two specific values of 10 and 15. This type of tendency could impact the meaningful use of the evaluation [5].

Methodology

In the observational study on the prevalence of cervical pain among computer workers in Parul University. we have taken the population who was having cervical pain and age range between 20 to 45. We have assessed the patients who met our inclusion criteria of having cervical pain and excluded the ones who had done any recent surgery of spine, or having rheumatoid arthritis, etc. we have taken computer workers of Parul university that work constantly on computer for prolong period of time. In the observational survey we have taken both male and female population. Our method to assess the patients of cervical pain in computer workers was by giving them a form that included,

1. Consent form(English & Guajarati)
2. Performa for data. (demographic data of patients)
3. Neck disability and index (to know functional limitation of patients)
4. Numeric pain rating scale (to assess the pain severity)

We have given the form to patients who were mainly working on computer, laptop for 2 to 3, 3 to 4, 4to5, 5to6, etc. or more hours. We explained them about the survey that we were going to take and asked them to fill a form that we have given to them. We explained them every details of form right from the first page to last. Firstly, we asked them to fill a consent form (English & Guajarati) that included patient name, address, signature, and contact number. then we asked them to fill a Performa that included class of a patient, number of working hours, type of pain, number of hours spent on computer etc. Then we asked to fill the form of neck disability index (English & Guajarati) we asked the patients to fill either in Guajarati or English in which patient is comfortable and easy to understand. Then we have asked to fill a form of numeric pain rating scale (English & Guajarati) which includes a scale from 1 to 10. We have told the patients to rate their pain by marking on scale anywhere in between 1 to 10.

After filling a questionnaire, we had done scoring for both neck disability index and numeric pain rating scale individually; we had done scoring on the basis of interpretation that was given for both scales. We have calculated score by using certain materials such as,

1. Calculator
2. Pen
3. Pencil
4. Eraser
5. Sharpener
6. Pen

On the basis of scoring we made a conclusion on the basis of data we had obtained from the neck disability index and numeric pain rating scale.

Stastical Analysis

Statistic Method

- Data was analyzed into working hour's wise distribution.
- Descriptive analysis of Mean is to use analyze the results.

Statistics software

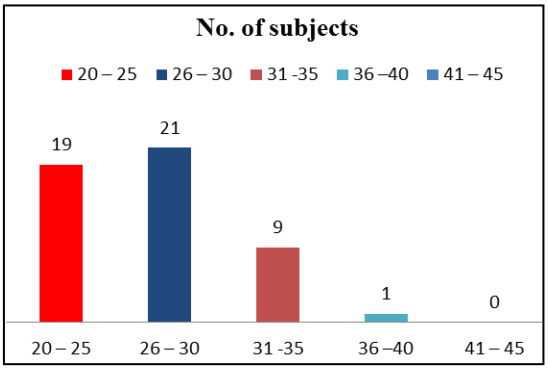
- Calculation of mean was done using software named "IBM SPSS Software version 20."
- Data analysis generated of tables and graphs was conducted using Microsoft Excel 2010, Microsoft Word 2010.

Result

Age Group

Table 1

Age Group					
Age Group	20 – 25	26 – 30	31 -35	36 –40	41 – 45
No. of subjects	19	21	9	1	0

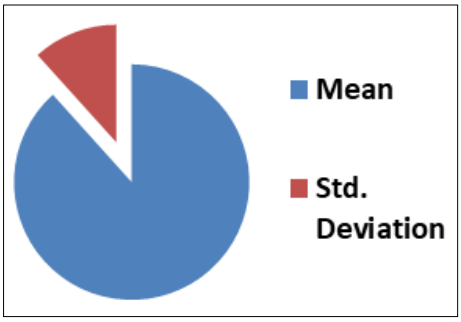


Graph A

Above graph shows the numbers of subjects and age criteria between working hours. The maximum subjects are there in age group of 26-30 year and minimum subjects are there in age group of 36-40 year.

Table 2: Descriptive Statistics

Mean & SD						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
VAR00001	50	14.00	23.00	37.00	27.5200	3.64350
Valid N (listwise)	50					



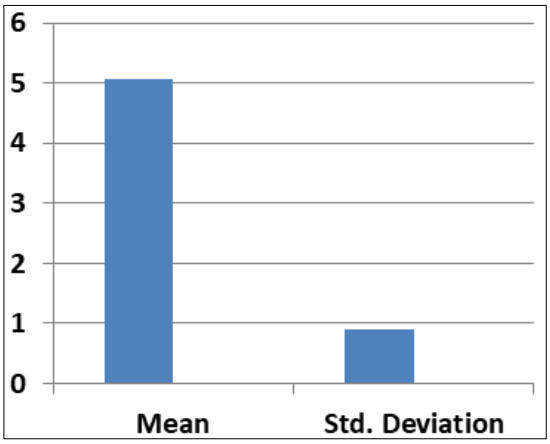
Graph B

Above graph shows mean age of subjects and their SD. The maximum age of subject is 37 year and minimum age is 23 years. Mean age of subjects 27 with SD of 3.64.

Working Hour Analysis

Table 2

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
VAR00001	50	4.00	4.00	8.00	5.0600	0.89008
Valid N (listwise)	50					



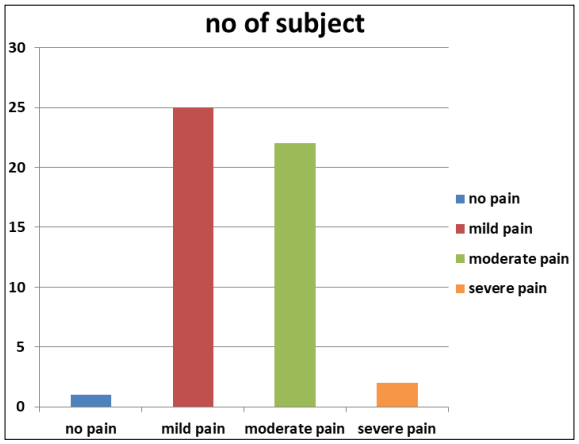
Graph C

Above graph shows the mean and their SD. The maximum working hour is 8 hour and minimum is 4 hour. The mean working hour is 5.06 hours with SD of 0.89. The working hours increasing the pain was severe.

Pain Intensity (NPRS)

Table 3

Pain intensity	No. of subject
no pain	1
mild pain	25
moderate pain	22
severe pain	2



Graph D

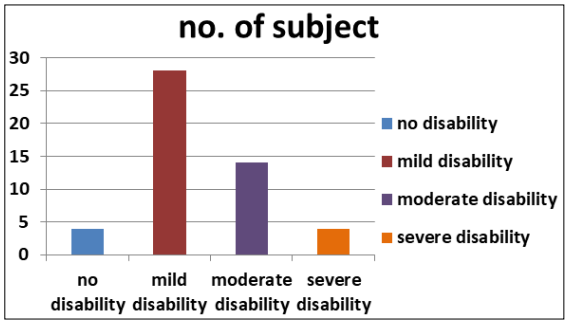
Above graph shows pain intensity and number of subjects having pain intensity of mild, moderate and severe. Maximum subjects have mild intensity of pain (50%),

followed by moderate intensity of pain (44%).

NDI

Table 4

Disability	No. of subject
no disability	4
mild disability	28
moderate disability	14
severe disability	4



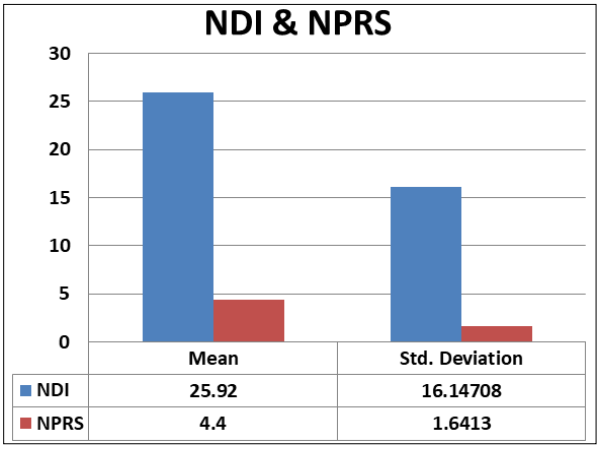
Graph E

Above graph shows neck disability and number of subjects having mild, moderate and severe neck disability on NDI scale. Maximum subjects (56%) have mild neck disability, followed by moderate disability in 28% subjects.

NDI & NPRS

Table 5

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
NDI	50	66.00	2.00	68.00	25.9200	16.14708
NPRS	50	8.00	0.00	8.00	4.4000	1.64130
Valid N (listwise)	50					



Graph F

Above graph shows mean and SD of NDI score and NPRS scale.
The mean NDI score is 25.92 with SD of 16.14 and mean NPRS is 4.4 with SD of 1.64.

Discussion

Computers have become a necessity during the past few years. Its use is increasing enormously in office workers and students. There is a growing body of literature from multiple universities that has identified college students experiencing pain related to computer use.

Therefore, purpose of this study was to determine the effect of working hours on the intensity of neck pain and level of disability. Mean working hours was 5 hours/day. This can be the reason for low correlation. The increase in working hours may lead to more significant results. Whereas mean job duration was 16 months as increase in job duration may give more specific results. The mean age of the participants was 27.52 years; the participants are at very low risk of degenerative changes. So, the therapeutic significance is that pain and disability should be considered as different variables.

The result of study shows mean NDI score was 25.92 and SD was 16.14. The mean working hour of computer worker is 5.06 hours. The study shows 56% computer workers have neck disability and 14% and 4% have moderate and severe neck disability respectively. As the working hour increases the NDI score also increases which suggest that increasing working hour may lead to increase intensity of pain and level of disability.

The mean NPRS score was 4.4 and SD was 1.4. Incidence of neck pain is very high with prolonged computer usage. Severe neck pain was found in people who use computer for more than 5 hours per day. According to this study, mean working hour for computer worker is 5.06 hours, and they have mean NPRS of 4.4. The study shows 25% computer workers have mild pain and 22% and 2% have moderate and severe pain respectively. Duration of computer use and frequency of breaks are associated with neck pain at work.

Many studies have investigated the prevalence of neck pain and/or work related musculoskeletal disorders in computer users, its risk factors and its impact on health. The results of our study are in accordance with other studies that neck pain is significant problems in computer users with prolonged usage of computer.

Therefore, preventive measures like ergonomic advice, postural advice and demonstration of neck exercises are to be integrated in places of prolonged use of computers. Engaging computer users in physical activity as a part of their work day, frequent micro breaks of 30 seconds once every 20-40 minutes are an effective means to reduce neck pain and that these micro breaks have no adverse effects on worker productivity.

The study had definite limitations. First, the sample size is very small. Secondly, lack of sensitivity of NDI such as lifting, driving and recreation did not apply on all the participants tested. Thirdly, degenerative changes occurring at cervical spine were not excluded and may have become the part of data collection. Lastly the environment factor such as travelling and driving were not considered during data collection.

Conclusion

It is concluded that incidence of neck pain and disability is high with prolong use of computer in parul university.

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