

# To Study the Relationship between Neck Pain and Anxiety, Depression in Computer Workers - A Correlation Study

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## ABSTRACT

**Background:** Neck pain has become a common health problem all over the world, with a high rate of disability, present a negative impact on quality of life in people. Depression and anxiety disorders are the most common illness in the community and play an important role in exacerbation of pain perception resulting in work impairment and decreased quality of life. This study aimed to investigate the relationship between neck pain and anxiety, depression in computer workers.

**Methodology:** A “Neck Pain And Disability (NPAD) scale” and “Hospital Anxiety and Depression Scale (HADS)” were filled by the 154 computer workers (Age of 20 to 60 years) and submitted scales through Google forms and interview method.

**Result:** Statistical analysis was done using SPSS version 20. Spearman’s test of correlation was applied between the outcome measures. There were a strong positive correlation found between neck pain and anxiety ( $r = 0.707$ ) and between neck pain and depression ( $r = 0.565$ ).

**Conclusion:** This study demonstrated strong positive correlation between neck pain and anxiety and between neck pain and depression.

**Keywords:** Neck pain, Anxiety, Depression, Computer workers

## INTRODUCTION

Neck pain is a significant public health problem that one in every two individuals around the world has experienced at least once in their lifetime<sup>[1]</sup>. Neck pain is defined as pain experienced from the base of the skull (occiput) to the upper part of the back and extending laterally to the outer and superior bounds of the shoulder blade (scapula)<sup>[2]</sup>.

Neck pain is a common health problem in the general population and especially among computer workers<sup>[3]</sup>. NP was ranked the fourth leading cause of disability next to ischemic heart disease, cerebrovascular disease, and lower respiratory infection, with an annual

prevalence rate exceeding 30%<sup>[4]</sup>. Besides, this situation can negatively affect the psychological state of individuals and make daily life more difficult<sup>[1]</sup>.

The risk factors for NP are commonly multidimensional, including muscular, skeletal and nervous system-related factors. Further, they can be both modifiable and non-modifiable, and can be divided into individual and occupational factors. Individual factors related to NP include, among others, sex, age, history of neck injury and psychological factors (e.g., mental stress, anxiety, depression and lack of social support). In addition, some studies have also indicated that occupational factors, including prolonged sedentary or

office work hours, high work load/demands and inappropriate workstation designs, are associated with NP<sup>[5]</sup>.

Musculoskeletal disorders of the neck and shoulder in office workers are likely influenced by prolonged static working positions, leading to continuous activity of low-threshold motor units, reduced local blood flow, accumulation of  $Ca^{2+}$ , and other homeostatic changes in the active muscle fibers. Thus, pain symptoms appear to worsen during prolonged static muscle activity and repetitive job tasks<sup>[3]</sup>.

Certain occupations such as office and computer workers, manual labourers, and health care workers, have been found in some studies to have a higher incidence of neck pain, the major work place factors associated with the condition are low job satisfaction and perceived poor work place environment<sup>[6]</sup>.

Depression and anxiety are common mental illness worldwide. The World Health Organization (WHO) estimates that about 260 million people were living with anxiety disorders and 300 million people were suffering from depression globally in 2017<sup>[7]</sup>. Major depression is currently the fourth leading cause of disease burden worldwide, and is expected to rank first in disease burden in high-income countries by the year 2030<sup>[8]</sup>.

While anxiety and depression have both been associated with experience of chronic pain. This important because anxiety and depression may affect pain in different ways and may require kinds of different interventions<sup>[9]</sup>. With the development of information and communication technology, computer works have become common in advanced countries in a wide variety of workplaces ranging from clerical to sales. Computer work has been demonstrated to be related to various adverse health effects with increased mental demands and workload<sup>[10]</sup>.

Previous studies supported that anxiety and depression play a significant role in chronic pain, but the correlation between neck pain, anxiety and depression

in computer workers had not been adequately explored. Aim of the study was to study the relationship between neck pain and anxiety, depression in computer workers.

## **MATERIALS AND METHODOLOGY**

A correlation study was performed in 154 computer workers. Data were collected from different companies such as Pvt. Ltd., TCS, IT companies, Addon web solution, from banks and other companies located in Ahmedabad. A standard questionnaires “Neck Pain And Disability scale (NPAD)” and “Hospital Anxiety and Depression Scale (HADS)” were filled by the computer workers and submitted questionnaire through Google forms and personal interview method.

Inclusion criteria for this study were willingness of subject to participate in the study, age group of 20 to 60 years, male and female both are included, using computer more than 6 hours a day and weekly more than 36 hours. The exclusion criteria were, subject with history of any special medical condition affecting the cervical spine, fracture of cervical vertebrae, any history of neurological disorders, any history of head injury or head trauma.

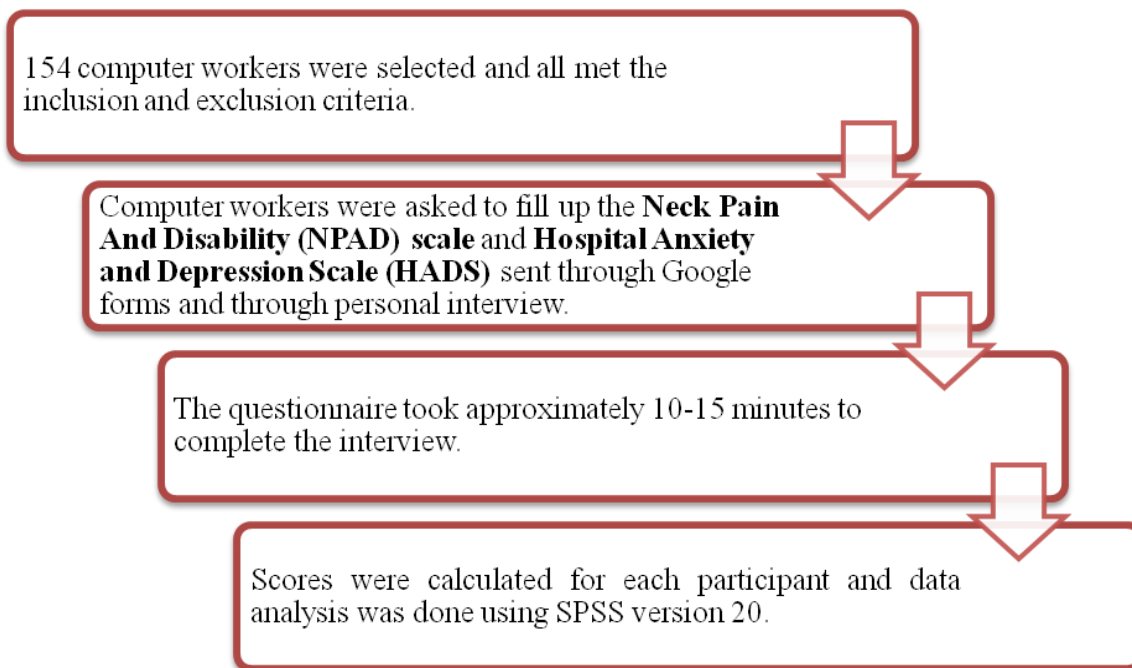
### **Outcome measure:**

- A) “Neck Pain And Disability (NPAD) scale” is a 20- item measure that was specifically developed for patients with neck pain. It measures the intensity of pain. Patient respond to each item by marking along a 10 cm visual analogue scale. Item scores ranges from 0 to 5, and the total score is the sum of the item scores (possible range 0 (no pain) – 100 (maximal pain)).
- B) Symptoms of anxiety and depression were assessed using the HADS (Hospital Anxiety and Depression Scale). This self screening questionnaire was developed by Zigmond and Snaith for detecting and classifying the severity of anxiety and depression. HADS contains 14 items and consist of 2

subscale anxiety and depression. Each item is rated on a four point scale with 7 items evaluating depression and 7 items assessing anxiety, giving maximum scores of 21 for anxiety and for

depression. Interpretation of this scale result like this: Normal = score 0 to 7, borderline abnormal = 8 to 10, abnormal = 11 to 21.

### Procedure of the study:



### Statistical Analysis:

Data was analysed by SPSS software version 20.0. The spearman's correlation coefficient was utilized to examine correlation of scores of NPAD with the scores of HADS scale. Level of significance was kept at 5%.

### RESULT

Data of 154 computer workers were analyzed. Baseline characteristics of computer workers are shown in Table 1. Mean baseline value for age was 26.63±8.22, mean value for working hours was 8.47±1.48, mean value for NPAD score was 38.37±22.68, mean value for anxiety score in HADS was 7.61±4.14, and mean

value for depression score in HADS was 7.12±4.08.

Correlation between neck pain and anxiety, depression are shown in Table 2. Strong significant positive correlation was found between NPAD and anxiety (r = 0.707) (p< 0.01) and also positive correlation was found between NPAD and depression (r = 0.565) (p< 0.01), as shown in graphs 1 and 2 respectively.

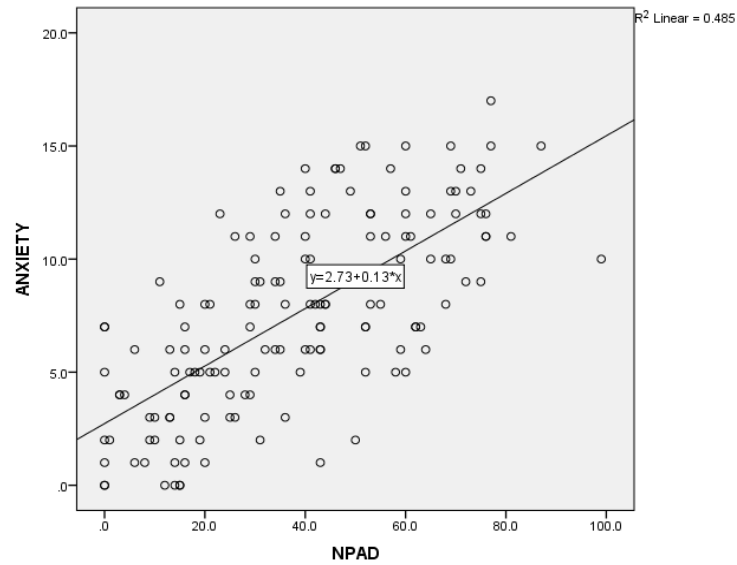
Table 1: Baseline characteristics of computer workers

No.	Variable	Mean±SD
1	Age (Years)	26.63±8.22
2	Daily working hours	8.47±1.48
3	NPAD	38.37±22.68
4	Anxiety	7.61±4.14
5	Depression	7.12±4.08

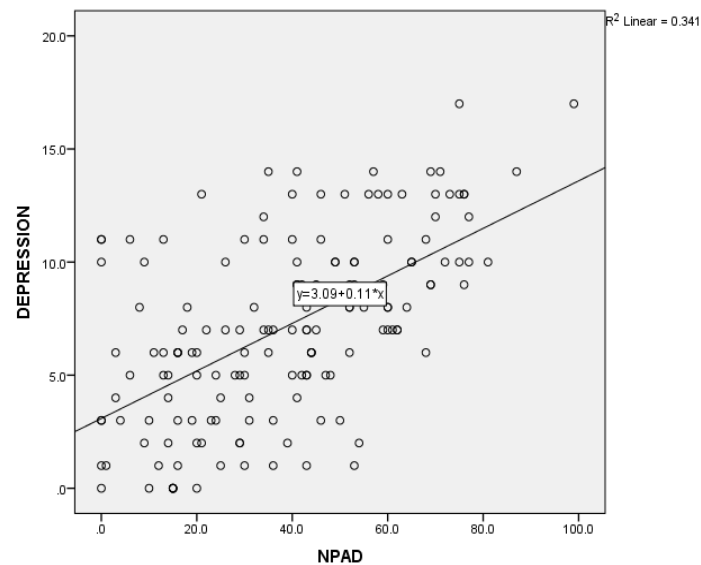
Table 2: Correlation of neck pain with anxiety and depression

		NPAD	ANXIETY	DEPRESSION
Spearman's rho	NPAD (Neck Pain and Disability Scale)	Correlation Coefficient	1	.707**
		Sig. (2-tailed)		<.001
		N	154	154

\*\* . Correlation is significant at the 0.01 level (2-tailed).



Graph 1. Correlation between scores of Neck pain and disability(NPAD) scale and scores of anxiety in HADS



Graph 2. Correlation between scores of Neck pain and disability(NPAD) scale and scores of depression in HADS

## DISCUSSION

This study was conducted on 154 computer workers suffering from neck pain, to find out correlation of neck pain and anxiety, depression. The present study shows positive correlation between neck pain and anxiety, and neck pain and depression. This finding from study supports the finding of other studies conducted in countries other than India.

Fushui Liu et al. identified 13 eligible studies involving 2339 patients and 3290 healthy people that intended to evaluate possible links between NP and mental disorders. Long term chronic pain has a profound impact on patient's mental

health, and they are prone to negative emotions such as anxiety and depression, which seriously affect patient's quality of life. Functional imaging studies showed the affective processing area of brain in patient with anxiety and depression symptoms that changed from the insula topology to the prefrontal area of weight-bearing pain management.

Besides, it was also found patients with depression and anxiety symptoms had dysfunction of autonomic nervous function and inflammation and activity hyperactivity of the hypothalamic pituitary-adrenal (HPA) axis. Interestingly, when neurotransmitters such as nor epinephrine (NE) and 5-

hydroxytryptamine (5-HT) decrease, the inhibitory mechanism of pain can be impeded and developmental disorders can be promoted<sup>[4]</sup>.

Erhan Secer et al. found that in patients with chronic neck pain, low-moderate negative correlation between the level of pain and sleep quality, low positive correlation between the level of pain and quality of life and low positive correlation between level of pain and anxiety level are found<sup>[1]</sup>. Imane Elbinoune et al. found that the level of depression was high in 55.7% and the level of anxiety was high in 68.4% of patients in a study in which they investigated the prevalence of anxiety and depression in 80 patients with chronic neck pain<sup>[11]</sup>.

Sheera F. Lerman et al. found that in 428 patients with chronic pain, depression and anxiety were highly prevalent with more than half reporting significant symptoms of depression and anxiety<sup>[12]</sup>. Eric W. De Heer et al. found that having a depression or anxiety disorder increases the odds of highly disability and severely limiting pain<sup>[13]</sup>.

Emma Fisher et al. conduct a systemic review of pain anxiety, pain catastrophizing, and fear of pain measures psychometrically established in youth with chronic pain. 54 studies (84 papers) met the inclusion criteria. They found significant positive correlation with variables pain intensity, disability, generalized anxiety, and depression<sup>[14]</sup>. However, studies done previously have concluded strong association between pain, anxiety and depression.

One of the important limitations of this study is that the other psychological factors such as insomnia, stress etc affect the neck pain are not included. In future studies, different population like students, teachers, and housewives should be taken and is recommended to include other psychological variables in future research and also specific age group criteria should be taken in future research.

## CONCLUSION

The current study demonstrated that the anxiety and depression are determinant factors to cause neck pain in computer workers. There is positive correlation between neck pain and anxiety, depression in computer workers.

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**Ethical Approval:** Approved

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