



## The incidence of upper quadrant dysfunction in nursing brothers

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### ABSTRACT

*The cranium, cervical spine, mandible, shoulder girdle complex are the biomechanical functional unit for maintaining natural head posture<sup>1</sup>. It is expected to conform to the physiological requirements associated with sight (visual axis), the vestibular balance system and hearing. In literature, this functional unit has been termed as "UPPER QUADRANT"<sup>2</sup>. Different components of this unit are linked to each other through musculoskeletal system forming a kinetic chain. Impairment in this musculoskeletal unit may produce at the various level such as; cervical, shoulder, elbow etc. however regardless or origin of site or unit affected eventually likely to the certain extent in long term. This may be one of the reasons for functional disability that person has to wean off from his occupation. This leads to workers absenteeism from his work, while on another side a person working environment itself can be the perpetuating risk factors for such impairment<sup>3</sup>. Impact of various factors in his occupation may predispose him to impairment and disability. Occupational safety and health administration exposure concern that there are disorders affecting wrist, tissue, arm and other anatomic areas as a result of ergonomic stress occurring from repetitive motions, forceful exertions, vibrations, sustained or outward positioning<sup>4</sup>.*

**Keywords:** Orthopedic OPD, Physiotherapy Outpatient, Nursing Brothers.

### 1. INTRODUCTION

The cranium, cervical spine, mandible, shoulder girdle complex are the biomechanical functional unit for maintaining natural head posture<sup>1</sup>. It is expected to confirm the physiological requirements associated with sight (visual axis), the vestibular balance system and hearing. In literature, this functional unit has been termed as "UPPER QUADRANT"<sup>2</sup>.

Different components of this unit are linked to each other through musculoskeletal system forming a kinetic chain. Impairment in this musculoskeletal unit may produce at a various level such as; cervical, shoulder, elbow etc. however regardless or origin of site or unit affected eventually likely to a certain extent in long term. This may be one of the reasons for functional disability that person has to wean off from his occupation. This leads to workers absenteeism from his work, while on another side a person working environment itself can be the perpetuating risk factors for such impairment<sup>3</sup>.

Impact of various factors in his occupation may predispose him to impairment and disability. Occupational safety and health administration exposure concern that there are disorders affecting wrist, tissue, arm and other anatomic areas as a result of ergonomic stress occurring from repetitive motions, forceful exertions, vibrations, sustained or outward positioning<sup>4</sup>.

Study of all such risk factor, therefore, is important to predict the impact to cause disability in person. What is important is, therefore, to study a subject under his own working situation<sup>4</sup>. This is not only important for a subject who is symptomatic but also for asymptomatic subject who is exposed to above mentioned ergonomic stress, predisposing him, to a risk of developing cumulative traumatic disorder in future, so early detection of a job stress which is likely to cause impairment is important, if industrial therapy is forming a basis for prevention<sup>5</sup>.

It has also been stressed that these are not only mechanical factors but also inability or difficulty of the subject to meet job demands which may lead to psychological stress, this way be important.

### 2. NEED FOR STUDY

As now a day's industrial work has been increasing so the stress on upper quadrant is also increasing due to their postural adaptation during work. Also, prolong work in one position lead to upper quadrant musculoskeletal dysfunction and may be due to

musculoskeletal dysfunction there are mood swings. So to evaluate the musculoskeletal dysfunction in upper quadrant this study is necessary.

### 3. AIMS AND OBJECTIVES

#### AIMS

- To find out the incidence of the musculoskeletal disorder in upper quadrant – A Hospital-Based Survey Study.

#### OBJECTIVES

- To determine the co-relation between shoulder impairment and upper limb, trunk, neck posture.
- To determine the co-relation between shoulder score and mood assessment scale.
- To determine the mood swings due to their work.

### 4. LITERATURE REVIEW

**Smelly J, Inskip H, Occupation Environment Med 2003 Nov; 60(11):864-9** stated that –

Neck and shoulder pain is common among hospital nurses and patient handling tasks that involve reaching and pulling. Also, neck pain is likely to develop from low mood or stress at baseline.

**Andersen JH, Kaergaard A, Occupation Environment Med. 2003 Sep;60(9):649-54** found that –

High levels of distress and physical and psychological workplace factors are predictors of onset of pain in neck and shoulder.

**Leclerc A, Chastang JF, Occupation Environment Med, 2004 Jan; 61(1):39-44** studied that –

A use of vibrating tools and working with arms above shoulder level and a low-level job control was associated with the onset of shoulder pain.

**Fredrikson K, Alfredsson L, Occupation Environment Med. 2002 Mar;59(3):182-8** stated that –

The relative risk for short-term exposure might indicate that for many factors the induction period for neck or shoulder pain is short.

**Lime JJ, Keeps BW, J Clin Epidemiol 2005 Apr;58(4):407-13** Studied that –

Clinical trials should have a sufficiently long follow up period to demonstrate sustainability of therapeutic results.

**Redcurrants BL** found that –

Pain and discomfort in the locomotor system among dentists had a high incidence and it could not be explained by ergonomic risk factors such as positioning of the patient, use of mirror or alteration of position.

**Redcurrants BL, Johnson Based Dent J 1990;14(2):71-80** stated that –

Those dentists who did not have discomfort in the upper locomotor system used the mirror more often than those who did suffer discomfort.

**Wicker SF, Chaffin DB, Ergonomics 1989 Feb;32(2):211-37** found that –

Posturing hands above shoulder level significantly increased the risk of localized muscle fatigue and postural discomfort even in light weight manual assembly environments where postural exertions are small.

### 5. MATERIAL AND METHODOLOGY

#### Material:

- Shoulder pain disability index questionnaire
- Mood assessment
- Rapid upper limb assessment (RULA).

#### Methodology:

**Study Design** – A survey-based study.

**Sample Size** – 25 subjects.

**Sample Technique** – Simple random sampling.

**Study Setting:** Patients referred from Orthopedic OPD to Physiotherapy Outpatient Department under a 950 bedded well equipped Multispecialty rural Hospital

#### Inclusion Criteria –

- Nursing brothers of staff.
- Age group of 19-30 years.

**Exclusion Criteria –**

- Those who are not ready to participate.

**Procedure –**

- Questionnaires were given including of shoulder pain (shoulder pain disability index), mood assessment and along done.
- Score was recorded for the three scales, shoulder pain scale, mood assessment scale and Rapid upper limb assessment (RULA) scale.

**6. DATE ANALYSIS AND GRAPHICAL PRESENTATION**

**Date Analysis –** Score of the three scales were analyzed and a co-relation study was done between shoulder pain and RULA and between shoulder pain and mood assessment.

**7. RESULTS**

Co-relation between shoulder impairment and upper limb, trunk and neck posture.

Co-efficient  $R = 0.62$ ,  
 $P = 0.78$ .

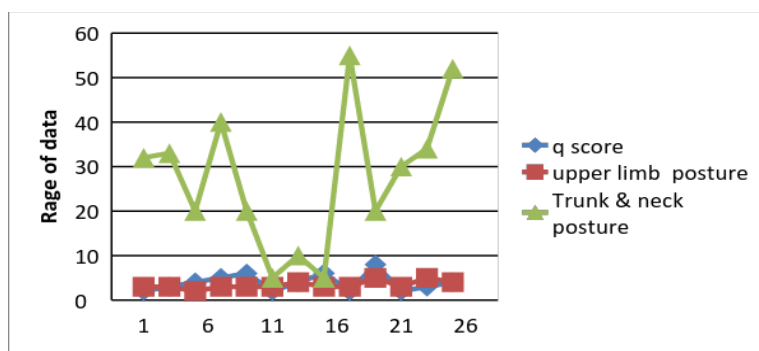
Co-relation between shoulder score and mood assessment scale.

Co-efficient  $R = 0.38$ ,  
 $P = 0.50$ .

Pie diagram showing percentage of population scored as mild depressive on mood assessment scale.

Mild depressive 64%  
 Normal 36%

**Graph 1 – Showing co-relation between shoulder impairment and upper limb, trunk and neck posture**



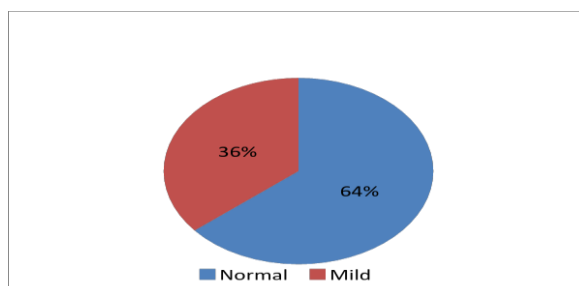
Co-relation between shoulder impairment and upper limb, trunk and neck posture. Co-efficient  $R = 0.62$ ,  $P = 0.78$ .

**Graph 2 – Showing co-relation between functional impairment of shoulder and psychological analysis of the subject in the population under study**

Co-relation between shoulder score and mood assessment scale.

Co-efficient  $R = 0.38$ , and  $P = 0.50$ .

**Graph 2 – Pie diagram showing the percentage of population scored as mild depressive on mood assessment scale.**



Pie diagram showing percentage of population scored as mild depressive on mood assessment scale. 64% Mild depressive and 36% Normal.

## **8. DISCUSSION**

From the study, it is concluded that 64% of subjects suffer from Mild depression whereas 36% subjects were found to be normal.

Further, the study also focuses that there is no such relationship between shoulder pain and neck posture. Because when subjects were assessed for a second or for a moment and during the next fraction of second the subject changes the position so the duration of present assessment and also of their position of doing work is less and is not significant to cause pain or stress or fatigue to the brothers.

It may be possible that though the brothers might be having pain due to their work-load but it did not become apparent during assessment as the duration of assessment was very less.

Further, the study also highlights on mood assessment i.e. mood swings due to pain which is not sufficient. As there may be other external causes for the mood swings.

Also, a daily routine work does not cause any pain but a heavy work during an emergency may cause pain which can be a contributory factor for mood swings.

## **9. CONCLUSION**

- Study of posture is not found to contribute the upper quadrant dysfunction.
- In the upper quadrant study psychologically the subjects are found depressed.

## **10. LIMITATION AND SUGGESTION**

- Smaller sample size
- Same population workers can be studied in different institutions.
- Co-relation between a number of hours and occurrence of upper quadrant should be studied.
- However upper quadrant dysfunction is present in quite an incidence, so the duration of posture which may be a contributory factor should be studied.
- A larger number of the population should be added.
- Such subjects should be selected which will provide the idea of prescription or possibility of modification according to the scores.
- Scales should be such that it has a provision to prescribe modification.

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