JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

EFFECT OF ERGONOMIC ADVICE ON QUALITY OF LIFE AND PAIN IN WORKING WOMEN'S DOING ADMINISTRATIVE AND HOUSEHOLD WORK WITH MECHANICAL NECK PAIN: A PILOT STUDY.

[1] DR. MAITRY PATEL, [2] DR. NILESH PARMAR, [3] DR. HARMISHA KADIYA

[1] MPT Scholar, Parul Institute of Physiotherapy, Parul University.

[2] Assistant professor, Parul Institute of Physiotherapy, Parul University, Vadodara Gujarat, India.

[3] MPT Scholar, Parul Institute of Physiotherapy, Parul University.

ABSTRACT

BACKGROUND:

Neck pain is a common problem in the general population, with point prevalence between 10% and 15%. In an Indian study, 67-71% of the general population has experienced neck pain during lifetime. Mechanical neck pain is defined as generalized neck pain with mechanical characteristics, including symptoms provoked by neck movements, neck postures and palpation of cervical muscles. It has become increasing problem causing functional disability. It is most common at approximately 50 years of age and is more common in women than in men.

METHODOLOGY:

Total 30 participants included in this study. Outcome measure for study was Neck disability index and numeric pain rating scale. Subjects were explained about ergonomics. Data was collected and results were calculated through SPSS version 20.

RESULT:

After intervention the results were calculated and data analysis was done using SPSS version 20 and it was found that ergonomic intervention showed significant improvement in reducing pain and improving quality of life.

CONCLUSION:

Based on the result of this study, ergonomic intervention showed significant improvement in reducing pain score and improving quality of life.

KEYWORDS: Mechanical neck pain, NDI, NPRS, Ergonomics

INTRODUCTION

Neck pain is a common problem in the general population, with point prevalence between 10% and 15%.It is one of the major musculoskeletal disorders in the adult population1; its prevalence in the world ranges from 16.7% to 75.1%.[1] In a Indian study, 67-71% of the general population has experienced neck pain during lifetime.[2]

The aetiology of this condition is complicated, involving a number of factors such as ergonomics (heavy physical activity, use of force and vibration, poor posture, repetitive movement), individual (age, BMI, genome, history of musculoskeletal pain), behavioural (smoking and level of physical activity), and psychosocial factors (job satisfaction, stress level, anxiety, and depression).[3] It is most common at approximately 50 years of age and is more common in women than in men. [1]

Mechanical neck pain is defined as generalized neck pain with mechanical characteristics, including symptoms provoked by neck movements, neck postures and palpation of cervical muscles. It has become increasing problem causing functional disability. It commonly arises insidiously and is generally multifactorial in origin, including one or more of the following: poor posture, anxiety, depression, neck strain, and sporting or occupational activities. [4]

In Ahmadabad city, among office employees working with Video Display Units, prevalence of self reported non specific neck pain was found to be 47%. Another study at Delhi among desk job workers reported that one-year prevalence of neck pain and work related neck pain were 43.3% and 28.3% respectively.

Jobs that lead to chronic neck pain are those that require repetitive work, typically at computer keyboards. These jobs are primarily in administrative offices, post offices, and banks. In these positions, there is overuse and misuse of the neck and shoulder muscles. [5]

It is the fourth leading causes of disability which will resolve with or without treatment with the annual prevalence rate exceeding 30%, but nearly 50% of individuals will continue to experience some degree of pain or frequent occurrences.[6]

Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain [7]. Many studies found women have a higher musculoskeletal morbidity than men in general population as well as in different occupational groups. The exact reason for these gender differences is unknown. According to the traditional model, biological differences in body shape, size, muscle mass, muscle strength and aerobic capacity, in combination with different physical demands, are sufficient causes for the observed differences. [8]

It is believed that job is one of the most effective factors on women's quality of life. In fact it is argued that a woman's level of education and her employment status are expected to be positively related to women's empowerment and thus affecting her quality of life. [9]

Forward head posture frequently appears in the patients with neck disorders. Approximately 60% of the neck pain patients are reported to have forward head posture Continuous forward head posture increases the load on the posterior cervical structures such as bones, ligaments, joint capsules, and muscles, and changes scapular kinematics and kinetics. Continuous neck pain alters the biomechanics of the cervical spine. [10]

Ergonomic interventions include modification to workstation, the work tools and work organization. [11] 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 work related neck pain. [7]

The Neck Disability Index (NDI) is a ten-item checklist that evaluates a patient's self-reported neck pain related disability. The NDI is the most commonly used, translated and oldest neck pain questionnaire. It has been shown to have high "test-retest" reliability. The NDI has also been found to be valid when compared to other pain and disability measures. Questions include activities of daily living, such as: personal care, lifting, reading, work, driving, sleeping, recreational activities, pain intensity, concentration and headache. Each question is measured on a scale from 0 (no disability) to 5, and an overall score out of 100 is calculated by adding each item score together and multiplying it by two. A higher NDI score means the greater a patient's perceived disability due to neck pain. [12]

There are studies done on ergonomic advice proposed as an effective for neck pain and there is lack of research on ergonomics advice to see the impact on quality of life and pain on working women doing administrative and household work with mechanical neck pain in Vadodara city. We therefore aimed to examine the effect of ergonomics advice to improve quality of life and pain on working women doing administrative and household work with mechanical low back pain in Vadodara city.

MATERIAL AND METHODOLOGY:

- Source of data: Parul University
- Study population: Working women's doing administrative and household work with mechanical neck pain.
- Study Duration:
  Total study Duration: 1 month
  Intervention Duration: 2 weeks
- Inclusion criteria:
  1. Age:18 to 45 years
  2. Subject with mechanical neck pain
- Exclusion Criteria:
  1. Pain in scapular and thoracic region.
  2. Neck pain with trauma.
  3. Any shoulder pathology/ trauma.
  4. Any systemic disease like RA, Ankylosing Spondylitis etc.
  5. Previous history of cervical and thoracic and shoulder surgery.
  6. Neurological symptoms including prolapsed intervertebral disc, Radiculopathy.
  7. Unable to understand the instruction.
- Sampling method: Simple random sampling
- Sample Size: n=30 subjects
- **Selection of Sample:** Selecting sampling who fits in inclusion criteria.
- **Study design:** An Experimental Study

➢ **MATERIAL:**
- Consent form
- Assessment form
- Pen
- NDI questionnaire
- Printed exercise and ergonomic advice booklet

➢ **OUTCOME MEASURES:**
1. Quality of life (Pre and Post)
2. Pain(Pre and Post)

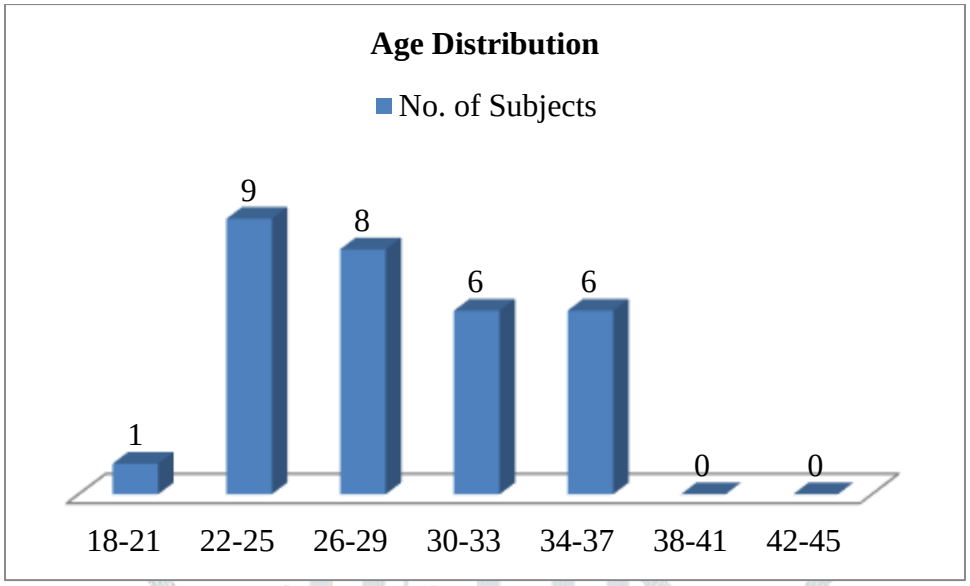
- **EVALUATION TOOL**
  1. Neck Disability Index(quality of life)
  2. NPRS(Pain)

PROCEDURE: Subjects are taken from Parul University. Subjects fulfilling the inclusion and exclusion criteria were included in study. A written consent form signed by the each subject prior to the study. A brief explanation was given to the subjects about the study and procedure to be conducted. Sampling was done and randomization was done according to criteria. An assessment was taken prior to study. The subjects were given ergonomic advice as well as booklet. The pre and post assessment was done. The parameters were Neck Disability Index and Numeric Pain Rating Scale.

Ergonomic Advice

- Maintain good and erect posture while working.
- Sit up straight with the shoulders rolled backward and neck pushed back gently.
- After short period, stretch the neck.
- Maintaining flexibility and reducing stiffness by doing Exercise regularly .
- Use a chair with back support.
- Do not sit or stand in the same position for prolong time.
- Avoid twisting the neck while sleeping.
- Use pillows to support the arms while sleeping help reduce neck strain and pain.
- Try placing a pillow between their knees if they are sleeping on their side or under them if they are sleeping on their back, to reduce spinal strain or pressure.
- Keep feet supported on the floor or on a footrest.
- Avoid twisting or bending your trunk or neck.
- Frequently used items should be positioned directly in front of you and angled upward on a copyholder when working.
- Keep your shoulders relaxed with your elbows close to your sides.
- Take breaks at least one or two-minute break every 15 to 20 minutes, or a five-minute break every hour. Every few hours, get up, move around, and do an alternative activity.

Result



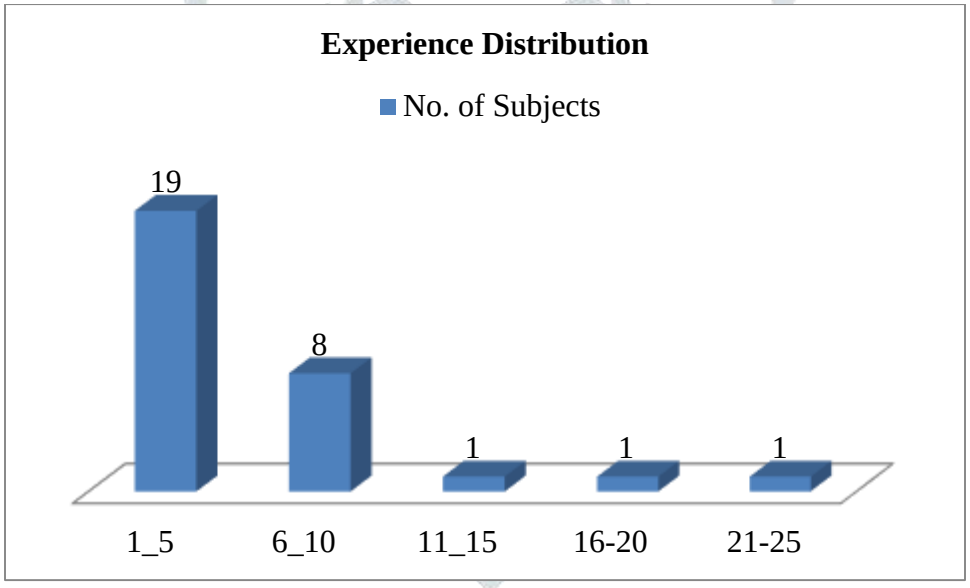


table 1: pre and post data for ndi

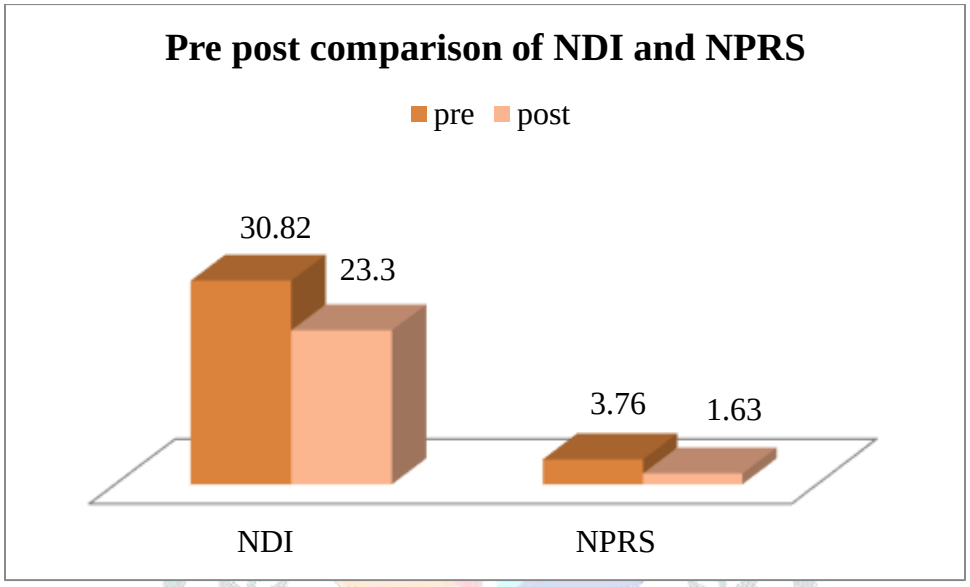
	Mean	**± SD**	**Z-value**	**p-value**	**Test**
Pre	30.82	9.32	4.79	0.00	Wilcoxon signed ranks test
Post	23.30	10.36			

Table 1 shows the intra group comparison of NDI for pre-test and after 2 weeks of intervention. Pre-test mean of NDI is 30.82 with the SD is 9.32, when it was compared with the mean of NDI 23.30 after 2 weeks of intervention with the SD is 10.36 ; obtained “Z” value was 4.79. This finding had showed that there was significant difference in NDI in pre and post-test.($p<0.0001$)

table 2: pre and post data for nprs

	Mean	± SD	Z-value	p-value	Test
Pre	3.76	1.69	4.74	0.00	Wilcoxon signed ranks test
Post	1.63	1.44			

Table 2 shows the intra group comparison of NPRS for pre-test and after 2 weeks of intervention. Pre-test mean of NPRS is 3.76 with the SD Is 1.69, when it was compared with the mean of NPRS 1.63 after 2 weeks of intervention with the SD is 1.44; obtained "Z" value was 4.74. This finding had showed that there was significant difference in NDI in pre and post-test($p<0.0001$).



DISCUSSION

The study was conducted in Parul University with 30 working women's doing administrative work typically on computer as well as household work. The age criteria selected was between 18-45years. The quality of life was assessed with NDI questionnaire and pain with NPRS. Scores were calculated and was analyzed using Wilcoxon signed ranked test. The results of this study support the effectiveness of ergonomic advice for working women's doing administrative work along with household work with mechanical neck pain.

In graph 1 the age distribution is done in small groups of 4, i.e. 1participant in age group 18-21, 9 participant in 22-25, 8 participant in 26-29,6 participant in 30-33, 6 participant in 34-37, 0 participant in 38-41and 42-45.

In graph 2, the experience distribution was done accordingly, i.e. 19 participants with 1-5 years of experience, 8 participants with 6-10 years of experience, 1 participant with 16-20 years of experience, 1 participant with 21-25 years of experience.

In graph 3, the comparison of pre (30.82) and post (23.3) mean value of NDI (quality of life) and comparison of pre (3.76) and post (1.63) mean value of NPRS (pain) is shown. The data of this study shows that ergonomic advice id effective for reducing pain and improving quality of life working women's doing administrative work along with household work with mechanical neck pain.

Naik prashant and Haval Pradnya et al conducted a study to observe the effect of ergonomic advice on neck pain on 331 engineering students of belagavi city. Ergonomic advice was given and a booklet was provided to them and after 4 weeks again assessment was done. Outcome measures used were neck pain and disability scale. 33.96% of pain reduction was seen after giving ergonomic advice and can be used for prevention of neck pain.

CONCLUSION

Ergonomic advice is effective in reducing mechanical neck pain and improving quality of life in working women's doing administrative work along with household work.

LIMITATIONS

- The study was done over a small sample size.
- Only women's were included.
- Study was conducted over a short period of time.

FUTURE RECOMMENDATIONS

- Both the genders can be included in the study.
- Study can be done with larger sample size.
- Study can be done in different population.
- Study can be done with more number of treatment sessions and follow up.

REFERENCE

1. Hoving JL, Koes BW, De Vet HC, Van der Windt DA, Assendelft WJ, Van Mameren H, Devillé WL, Pool JJ, Scholten RJ, Bouter LM. Manual therapy, physical therapy, or continued care by a general practitioner for patients with neck pain: a randomized, controlled trial. Annals of internal medicine. 2002 May 21;136(10):713-22.
2. Cagnie B, Struyf F, Cools A, Castelein B, Danneels L, O'leary S. The relevance of scapular dysfunction in neck pain: a brief commentary. journal of orthopaedic & sports physical therapy. 2014 Jun;44(6):435-9.
3. Genebra CV, Maciel NM, Bento TP, Simeão SF, De Vitta A. Prevalence and factors associated with neck pain: a population-based study. Brazilian journal of physical therapy. 2017 Jul 1;21(4):274-80.
4. Priya S. Efficacy of Scapular Stabilization Exercises in Patients with Mechanical Neck Pain (Doctoral dissertation, PSG College of Physiotherapy, Coimbatore).
5. Chakraborty S, Sinha D, Chatterjee S, Basu M, Misra R. A Study on Work Related Neck Pain among Bank Employees in Kolkata, India.
6. Cohen SP. Epidemiology, diagnosis, and treatment of neck pain. InMayo Clinic Proceedings 2015 Feb 1 (Vol. 90, No. 2, pp. 284-299). Elsevier.
7. Green BN. A literature review of neck pain associated with computer use: public health implications. The Journal of the Canadian Chiropractic Association. 2008 Aug;52(3):161.
8. Nazish N, Charles MJ, Kumar V, Prevalence of Musculoskeletal disorders among house wives and working women. International Journal of Health.2020;10(2):215-22
9. Saravi FK, Navidian A, Rigi SN, Montazeri A. Comparing health-related quality of life of employed women and housewives: a cross sectional study from southeast Iran. BMC Women's Health. 2012 Dec;12(1):1-5.
10. Im B, Kim Y, Chung Y, Hwang S. Effects of scapular stabilization exercise on neck posture and muscle activation in individuals with neck pain and forward head posture. Journal of physical therapy science. 2015;28(3):951-5.
11. Tsang SM, So BC, Lau RW, Dai J, Szeto GP. Effects of combining ergonomic interventions and motor control exercises on muscle activity and kinematics in people with work-related neck–shoulder pain. European journal of applied physiology. 2018 Apr;118(4):751-65.
12. Howell ER. The association between neck pain, the Neck Disability Index and cervical ranges of motion: a narrative review. The Journal of the Canadian Chiropractic Association. 2011 Sep;55(3):211.