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A Comparative Study between Stretching with Postural Modification versus Stretching Alone in Smartphone Users with Neck Disability

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ABSTRACT

Aim: The aim of study is to compare the effectiveness of stretching with postural modification and stretching alone in smart phone users with neck disability.

Objectives

1.To find out the effect of stretching with postural modification in smart phone users.
2.To find out the effect of stretching alone in smart phone users.
3.To compare the effect of stretching with postural modification and stretching alone in smartphone users with neck disability.

Method: The study was quasi-experimental study maximums of 30 participants were selected for those who met the inclusion criteria and divided into two groups Group A and Group B. The patients were explained about the treatment technique before treatment application. Group A was given stretching and postural modification and Group B was given stretching alone. Paired t-test, unpaired "t"- test were used.

Results: There In the analysis and interpretation of visual analogue scale for pain which showed that there was statistically significant difference between pre Vs post test results of Group A and Group B and there was significant reduction of pain in Group B compared to Group A in response to treatment. There was significant improvement of goniometry measures in Group B compared with Group A in response to treatment.

Conclusion: The study was concluded that the results showed that stretching with postural modification as more effective in reducing pain and improving neck disability in patients with neck disability when compared with stretching alone.

Keywords: Vas, Goniometer, Postural Modifications, Neck Disability.

INTRODUCTION

Smartphone is a mobile hand-held device with advanced computing capabilities, such as internet communication, information retrieval, entertainment (music, videos and games) etc. Because of its portability the smart phones has had a large impact on modern life. Smart phones has become a necessity one most people. Smart phones are used for both communication and entertainment purposes, such as message, music, media, internet access, photos and games. According to the worldwide sales of smart phones to end users total of 349 units in the first quarter of 2016, which is a 3.9%increse over the same period in 2015.smartphone sales represented 78% of total mobile sales in the first quarter of 2016. [(1,2)]

According to reports about one in four teens in America reported owning smart phones are increasing among teenage users. For many people in today's society, a smart phone is one of life's essential goods.

Some 56% of the population of the United States use a smart phone and the average time spent on a smart phone per day is 5.1 hours. The number of mobile phone subscribers in Korea was approximately 57,330,000 in March 2015, 41,260,000 of whom were smart phone subscribers. It is common place for smart phones to be used to access music, video and social network services (SNS)as well as to make and receive calls. [15,16]

Smart phones, unlike computers, features a small screen that is likely to induce a more slouched posture toward a line of sight below eye level when used for a long time, a video terminal such as a smart phone might therefore induce an improper posture (i.e.) forward head posture (or) slouched posture .Forward head posture (FHP) is a common neck disability (or) disease in contemporary society and it is caused by sitting at a desk for a long time. Maintain the continuous posture leads to damage to the ligaments around the neck (or) lumbar. In addition, such as posture is caused by muscle fatigue and decreased physical activity. [17]

As a result, the weakness of the respiratory muscle decreases the lung capacity and increase pain and disease. Eventually, excessive use of a smart phone may cause the maintenance of a slouched head posture for a long time and hence impose stress on the musculature as well as skeletal changes that may cause the loss of the C-Shaped curve in the cervical spine, which may start to curve forward instead such a disarrangement may cause homeostasis, which controls the blood supply and metabolites in the muscles and it can result in significant pain and a loss of function. [18]

Forward head posture that adapts upper cervical extension and lower cervical flexion. The centre of gravity of the head in this posture is positioned at the front rather than the vertebral body weight. In addiction forward head posture usually leads to muscle weakness and increased stress due to the muscle shortening of the neck extensors, especially at the back of the head [3,4]

AIMS & OBJECTIVES

AIM OF STUDY

The aim of study is to compare the effectiveness of stretching with postural modification and stretching alone in smart phone users with neck disability.

OBJECTIVES:

1.To find out the effect of stretching with postural modification in smart phone users.

2.To find out the effect of stretching alone in smart phone users.

3.To compare the effect of stretching with postural modification and stretching alone in smart phone users with neck disability.

HYPOTHESIS*:* There may be significant difference between the effect of stretching with postural modification and stretching alone in smart phone users with neck disability.

METHODOLOGY

STUDY DESIGN: Pre and post test quasi experimental design.

STUDY SETTING:

The study had been conducted in outpatient department in JKKMMRF College of physiotherapy

STUDY DURATION:

One session/day in alternative days.

Six weeks.

STUDY SAMPLING:

30 subjects were included in this study. The subjects were randomly divided into two groups. As Group A and Group B with 15 subjects in each group.

INCLUSION CRITERIA:

Age group between 20-24 years.

Person with neck disability.

Both male and female.

All races, using smart phones for more than 4 hours each day followed by onset of symptoms and voluntary participation.

Spinal (or) Cervical radiculopathy.

EXCLUSION CRITERIA:

Patient with mal position.

Patient using smart phones have neurological disorders.
Recent fractures with neck and upper limb.
Cervical disc prolapse.
Spinal (or) Cervical trauma and cervical radiculopathy.

PARAMETERS:

Visual analogue scales (VAS)
Goniometer

PROCEDURE: The study was quasi-experimental study maximum of 30 participants were selected for those who met the inclusion criteria and divided into two groups Group A and Group B. The patients were explained about the treatment technique before treatment application.

GROUP A (stretching and postural modification): The patients were in sitting position with back support and therapist was in standing position. The therapist gradually stretches the patients' neck. The neck stretching exercise was given for 5 times a week for 6 weeks followed by postural modification.

GROUP B(stretching alone):The patients were in sitting position with back support and therapist was in standing position. The therapist generally stretches the patients neck and the treatment was given for 5 times a week for 6 weeks. Pamphlets of neck stretching alone were given to participants.

STATISTICAL TOOL: paired t-test, unpaired "t"- test

RESULTS

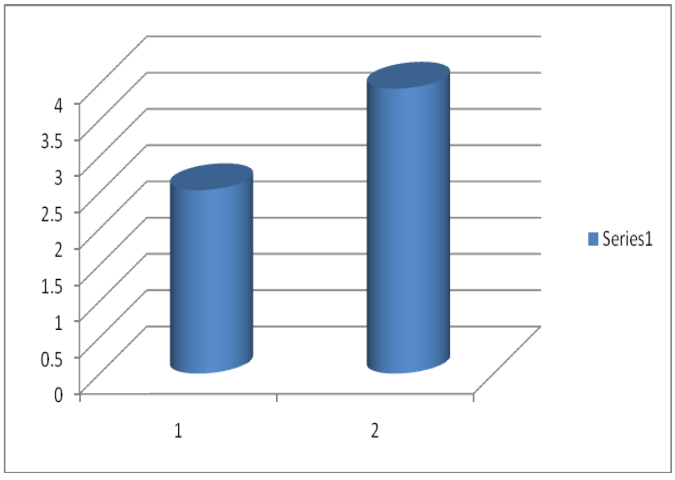
The section deals with analyses and interpretation of data collected from group A and group B who underwent Visual Analogue Scale and Goniometer respectively

The comparative mean value, mean difference, standard deviation, and unpaired 't' value between pre and post-test value of Visual Analogue Scale in group A and group B.

VAS pain response	mean	Mean difference	Standard deviation	Unpaired 't' value
Post test	2.53			
Post test	3.93	2.10	0.26	4

The unpaired "t" value of 4 was greater than the tabulated " t "value of 2.05 which showed that there was a statistically significant difference at 0.05 level between mean difference of group A and group B. The post test mean of group A was 2.53 and the mean post test of group B was 3.93 and mean difference of group A and group B was 0.26 which showed that there was statistically significant reduction in pain in response to stretching with postural modification.

Comparison between the post test of visual analogue scale in Group A and Group B

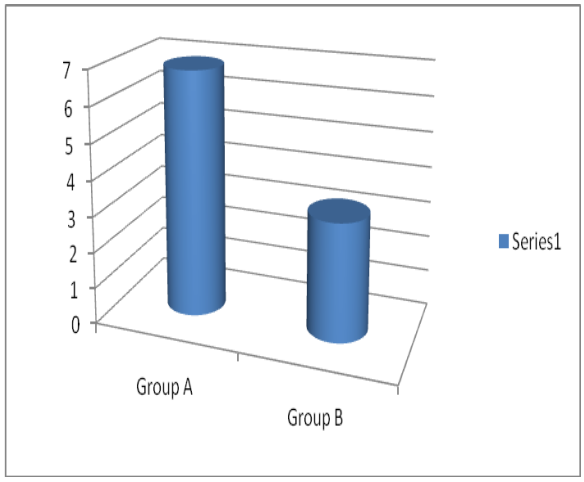


The comparative mean value, mean difference, standard deviation and unpaired 't' value between pre and post test value of Goniometer between group A and group B.

Goniometer	Mean	Mean difference	Standard deviation	Unpaired 't' value
Post test	35.8			
Post test	30.4	5.4	4.82	3.34

The unpaired "t" value 3.34 was greater than the tabulated t value of which showed that there was a statistically significant difference at 0.05 level between mean difference between mean difference of group A and group B. The post test mean of group A was 35.8 the mean difference of post test of group B was 30.4 and mean difference of group A and group B was 5.4 which showed that there was statistically significant reduction neck pain in response to treatment in group A when compared to group B.

Comparison between the post test for Goniometer in Group A and Group B



DISCUSSION

The aim of the study was to analyze the effectiveness of stretching and postural modification versus stretching alone in neck disability among smart phone users by comparing the neck range of motion and pain scale after 6 weeks home-based treatment program. The study was done among students with age groups ranging from 20 to 24 years old who used smart phone more than 4 hours each day followed by the onset of symptoms such as neck disability (or) neck pain.

A study reported that both stretching and postural modification were equally effective in reducing neck pain and improving cervical range motion in smart phone users [(7)] and another one of the study reported that both stretching and manual therapy, considerably decreased neck pain and disability in women with non-specific neck pain. [(8)] A study showed that there was no statistically significant difference between neck pain and disability. [(9)]

A study conducted on who work with computers for more than 6 hrs per day and who rarely work with computers were enrolled and forward head postures during computer-based work may contribute to some disturbance in the balance of healthy adults. [(12)]

The results of one study confirms that both visual analogue and verbal descriptor techniques successfully quantity sensory intensity and affective aspects of pain. [(13)] A study reported that for cervical range of motion in goniometer was found to be a valid for measuring cervical flexion and extension. [(10)] Another one of the study shows that the CROM showed excellent criterion validity for measurements of cervical rotation. [(11,5)] In this present study VAS and goniometer were used to measure the outcomes.

In a study which was to compare the effectiveness of a 12-month home-based combined strength training and stretching alone in the treatment of chronic neck pain , the study was done among 25 to 53 years patients with non-specific neck pain and the duration of non-specific neck pain was more than 6 months. The result of this study indicated that both stretching and postural modification versus stretching alone were equally effective in reducing neck pain and improving cervical range of motion of smartphone users, but no significant difference found between the groups. The

result obtained were in consensus with the previous study done by Ana Claudia Violino Cunha et al (2008) [14,6] in which the pain intensity reduced and range of motion improved following muscle chain stretching , proposed by global posture re-education method and conventional static stretching over neck region.

According to study done by Ylinen et al. (2007) found that at a 12 months follow up , a significant reduction in neck pain as a result of stretching exercise performed at average of twice weekly and the advice about stretching exercise and manual therapy are among the most commonly used treatments for chronic neck pain. [8] In this present study stretching with postural modification was more effective than stretching alone in patients with neck disability.

CONCLUSION

The study was concluded that the results showed that stretching with postural modification as more effective in reducing pain and improving neck disability in patients with neck disability when compared with stretching alone.

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