



COMPARISON OF KINESIOTAPING VERSUS ARM SLING ON SHOULDER FUNCTION AND EXTENT OF SHOULDER SUBLUXATION IN SUBJECTS WITH SUB-ACUTE STROKE

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ABSTRACT:

INTRODUCTION:

Stroke is defined as a rapidly developing clinical sign of focal disturbance of cerebral functions, lasting more than 24hrs (or) leading to death with no appropriate cause, other than that of vascular origin. Subluxation is associated with multiple factors including frozen shoulder flaccid upper limb spasticity rotator cuff lesion shoulder hand syndrome. The most important factor is the position of the scapula on the thorax. The scapula is normally held on the thorax at the angle of 30 degrees from the frontal plane. When the slope of the glenoid fossa becomes less oblique and no longer faces upwards the humerus slides down the slope the fossa and leads to inferior subluxation.

AIM:

Aim of the study was Comparison of kinesiology taping versus arm sling on shoulder function and extent of shoulder subluxation in subjects with sub-acute stroke.

MATERIALS AND METHODS:

30 subjects with Subluxation were randomly assigned into two groups. All the participants were assessed for the pre values with FB and FMUE. Subjects in experimental group1 (n=15) received 15 sessions of KINESIOTAPING & PHYSICAL THERAPY whereas, Experimental group2 (n=15) received 15 sessions of ARM SLING AND PHYSICAL THERAPY per total 3 weeks. All participants were assessed for post values with FB and FMUE after 3 weeks of training sessions

STATISTICAL ANALYSIS:

After the analysis, the results revealed significant improvement in KINESIOTAPING than in the ARMSLING group ($p = 0.01$)

RESULTS:

The results of this study showed that there is statistically significant improvement in both groups but KINESIOLOGY TAPPING group shows more improvement than the ARM SLING groups for Subluxation and functional status. But, there is a high significance results in experimental group1 compared to the experimental group 2.

CONCLUSION:

The basic hypothesis of this study was that kinesiotaping technique to the Shoulder of the affected upper limb in conjunction with physical therapy exercise program would enhance the subluxation, which further decreases the Subluxation of affected upper limb in sub-acute stroke patients. Findings suggest that kinesiotaping technique is safe, inexpensive and effective enough in increasing function and decreases the Subluxation in subjects with sub-acute stroke.

KEYWORDS:

KINESIOTAPING, ARMSLING, FINGERBREADTH, FUGAL MEYER UPPER EXTRIMITY.

INTRODUCTION

Stroke is defined as a rapidly developing clinical sign of focal disturbance of cerebral functions, lasting more than 24hrs (or) leading to death with no appropriate cause, other than that of vascular origin.^[1] Stroke is the 3rd primary cause of death throughout the worldwide; this stroke incidence has been quoted as 0.002% of population per annum and about 0.004% of people aged 45-84 years.

Types of stroke include :- (i) **Ischemic (Clots)**, (ii) **Hemorrhagic (Bleeds)**, (iii) **TIA**. **Ischemic** stroke occurs when a blood vessel supplying blood to the brain is obstructed. It accounts for 87 percent of all strokes, **hemorrhagic** stroke occurs when a weakened blood vessel ruptures and make up about 13 percent of stroke cases and **transient ischemic attack** called a "mini stroke," it's caused by a serious temporary clot.^[2] In India, the prevalence of Cerebro Vascular disease (CVA) was

found to be 13/100,000 per year in a study conducted at Vellore in 1967-1977 and 33/100,000 per year a study conducted at Rohtak. WHO study in 1990 quoted incidence mortality due to stroke in India to be 73/100,000 per year [3].

The most physical problems for clients with hemiplegia is the shoulder pain, subluxation, loss of muscular activity and loss of functional use. Significant proportions of a stroke patient who attend rehabilitation clinics present an inferior subluxation of humeral joints and are reported to be present in 70 to 80%, and it causes so many complications like Pain, Motor Impairment, Activity Limitation and Decrease in Quality of Life [4]. Stability is achieved through rotator cuff-a musculotendinous sleeve which maintains the humeral head in the glenoid fossa, while at the same time allowing shoulder mobility. Subluxation has been proposed as a contributing factor in the development of shoulder pain, activity limitation and quality of life [4]. Treatment of hemiplegic limb in the upright position with various supportive aids is still controversial. No doubt appropriately chosen shoulder supports can correct the subluxation to varying degrees with regards to the motor function of the affected extremity. Shoulder subluxation occurs in stroke patients when any of the biomechanical factors contributing to glenohumeral stability are disturbed. Subluxation is associated with multiple factors including frozen shoulder, flaccid upper limb spasticity, rotator cuff lesion, shoulder hand syndrome. The most important factor is the position of the scapula on the thorax. The scapula is normally held on the thorax at the angle of 30 degrees from the frontal plane. When the slope of the glenoid fossa becomes less oblique and no longer faces upwards, the humerus slides down the slope of the fossa and leads to inferior subluxation [5]. Subluxation is not painful as long as the scapula is mobile. Within an inferior subluxation, the humeral head is located below the inferior lip of the glenoid fossa. Assubluxation occurs the shoulder capsule is vulnerable to stretch, especially when humerus is hanging by the body. [5] Months following stroke, patient develops spasticity leads to hemiplegic shoulders exhibiting internal rotation and restricted the motion or pain. Subluxation increases the functional disability of shoulder and limits the shoulder range of motion. Biochemical shoulder problems resulting from this type of arm:

1. Rotation of the scapula
2. Vertebral border and inferior angle winging of the scapula
3. Inferior glenohumeral joint subluxation
4. Humeral internal rotation [5]. So, to improve the functional status, ADL'S and QOL.

There is need to perform extensive research related to this aspects.

NEED OF THE STUDY

Several studies have been conducted previously to examine the recovery of shoulder subluxation. Some of the studies have proved that effects of arm sling on reducing

the shoulder subluxation and many of studies proved that kinesiotopeping shows effect on shoulder subluxation. "Effect of kinesiology tapping on hemiplegic shoulder pain and functional outcomes in sub-acute stroke patients" "In this study they proved that kinesiology tapping limit the shoulder pain and increases the shoulder flexion in sub-acute stroke patients.[6]." "A randomised controlled trial on immediate and long term effects on shoulder subluxation in stroke patients" in this study they proved that immediate correction should be needed. Subluxation seemed to reduce in patients that did not wear a sling.[7] There is no evidence in research regarding comparative studies between KT and AS. Hence, the need of the present study is to know the comparison between the kinesiotopeping and arm sling on shoulder Function and extent of shoulder subluxation in subjects with sub-acute stroke.

AIM OF THE STUDY

Aim of the study is to compare the kinesiotopeping versus arm sling on shoulder function and extent of shoulder subluxation in subjects with sub- acute stroke.

OBJECTIVE OF THE STUDY

1. To evaluate the effectiveness of kinesiotopeping on extent of shoulder subluxation by Finger breadth method in sub-acute stroke subjects with shoulder subluxation.
2. To evaluate the effectiveness of arm sling on extent of shoulder subluxation by Finger breadth method in sub-acute stroke subjects with shoulder subluxation.
3. To evaluate the effectiveness of kinesiotopeping on extent of shoulder subluxation by fugal -Mayer assessment on shoulder function in subjects with sub-acute stroke patients.
4. To evaluate the effectiveness of arm sling on extent of shoulder subluxation by fugal-Mayer assessment on shoulder function in subjects with sub-acute stroke patients.

HYPOTHESIS

Alternate hypothesis: There is no significance difference in both the groups on extent of shoulder subluxation and shoulder function in subjects with shoulder subluxation.

NULL HYPOTHESIS:

Neither Kinesiology tapping nor armsling not shows any effect in reducing shoulder function and shoulder subluxation in subjects with sub-acute stroke.

MATERIALS AND METHODOLOGY.

MATERIALS: Plastic Arm chair, Couch, Pillow, Kinesiotape, Arm sling.

SAMPLE SIZE: The total number of subjects were 30.15 in each group

STUDY DESIGN: This is a two way experimental study.

GENDER: Both Males and Females

SAMPLING METHOD: Randomized sampling using lottery method.

SAMPLE SIZE CALUCULATION: Total number of subjects 30, 15 subjects in KT group, 15 subjects in AS group.

STUDY SET-UP: Department of physiotherapy, SVIMS, general ward, neurology department, ayurvedic department in SVIMS hospital, Tirupati

STUDY DURATION: 3 weeks (5 sessions/week)

TOTAL TREATMENT TIME ----- 5 days/week for total 3 weeks.

INCLUSION CRITERIA:

1. Stroke subjects with Age group between 35-55 years
2. Both males and females are included
3. Stroke subjects with Unilateral hemiplegia
4. Ischemic stroke and hemorrhagic stroke both are included.

EXCLUSION CRITERIA:

- Chronic stroke subjects with non-specific skin diseases.
- Chronic stroke patients with ankle pain due to soft tissue problems.
- Chronic stroke subjects with cognitive and perceptual deficits.
- Chronic stroke subjects with other neurological disorders.
- Chronic stroke subjects with sensory deficits.
- Chronic stroke subjects who are fully dependent on others to do their daily activities.

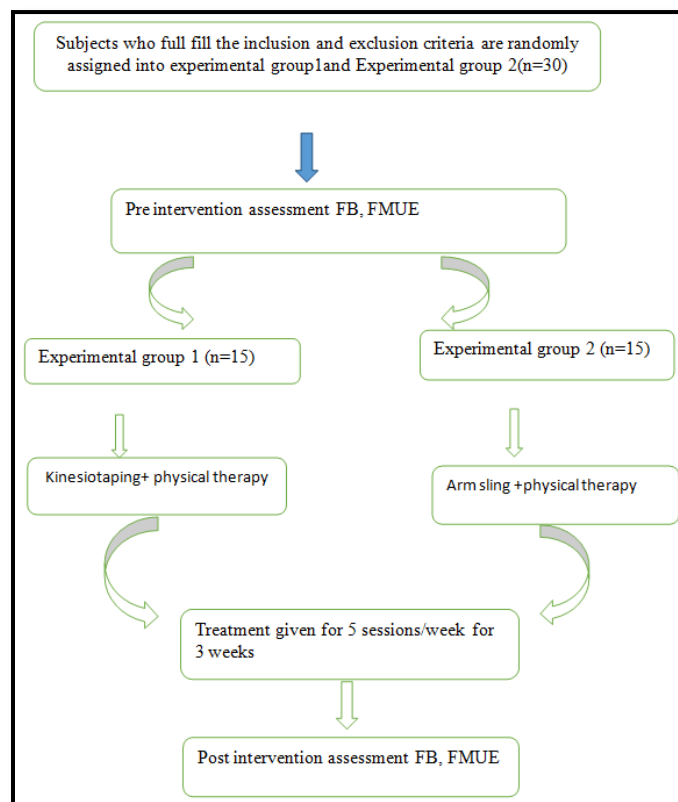
METHODOLOGY:

36 subjects referred with the diagnosis of sub-acute stroke were assessed and 30 subjects met the inclusion criteria; the subjects were explained clearly regarding the study procedure. Basic demographic data (age, gender, duration of stroke, side etc.) along with their mobile number were recorded from the subject for the first time of their visit to SVIMS COP, Ayurvedic hospital. Instructions were given to subjects before performing FINGERBREADTH METHOD AND FMUE pre-values are taken from both the groups. [6]

After assessing SUBLUXATION of the subjects, kinesiotaping technique applied to first 15 subject and ARMSLING technique applied to second subject and for 5days/week for a total period of 3weeks, but the subjects of both the groups were advised verbally to do Shoulder bracing exercises at home for 5 days/week for a total period of 3 weeks. Follow up is taken after 3 weeks about subluxation measurements.

FLOW CHART:

Between January 2019 to April 2019, 30 consecutive Sub-acute stroke subjects who met the inclusion criteria and gave consent to participate in the study with age,gender,onset of stroke duration were included in the study to measure Subluxation.



STUDY PLAN

Experimental Group I: kinesiotaping technique and Physical therapy exercises.

Experimental Group II: Armsling technique and physical therapy exercises.

EXPERIMENTAL GROUP-I:

- Kinesiotaping technique for 5 days/week, for a total period of 3weeks.
- Physical therapy for 5 days/week, for a total period of 3 weeks.

KINESIOTAPPING TECHNIQUE:

Instructions were given to the patient to shave hair on part of body at anterior aspect of shoulder before one day of taping application, sweat is wiped with cotton. Shoulder is positioned and the patient was made to sit in a comfortable position on a couch and 3 I-strips of kinesiotape with 3 inches width, 10 Inches length was applied on affected and stretched with a tension of 70 – 80%. Taping was applied for 3 days in a week and was continued for 3 weeks. Kinesiology tape is applied over the affected area with the muscles in a stretched position. Then Kinesiology tape is applied from one end of the muscle to the other with varying amounts of stretch to the tape. The tape is applied from the muscle origin to the insertion for muscle support / facilitation. For Muscle relaxation Kinesiology tape is applied from muscle insertion to the origin.

EXPERIMENTAL GROUP-II:

- Arm sling technique for 5 days/week, for a total period of 3 weeks.

- Physical therapy for 5 days/week, for a total period of 3 weeks

ARMSLING TECHNIQUE: ROLYAN HEMI ARMSLING APPLICATION

Instruction were given to the patient to shave hair on part of body at anterior aspect of Shoulder before one day of taping application, sweat is wiped with cotton. Shoulder is positioned and patient is in sitting position, therapist is in walk standing position. Position the forearm so the hand is slightly higher than the elbow about a 10 degree angle.

TREATMENT PROTOCOL FOR EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2:-

Exercise protocol given to the both the groups in common for duration.

The following instructions were given to the patient:-

[1] SHOULDER FLEXION (LYING DOWN)

For this exercise, you will need a wand. To make a wand, use a piece of PVC pipe or a broom handle with the broom removed. Make the wand about 30 centimetres wider than your shoulders.

1. Lie on your back, holding a wand with your hands. Your palms should face down as you hold the wand. Place your hands slightly wider than your shoulders.
2. Keeping your elbows straight, slowly raise your arms over your head until you feel a stretch in your shoulders, upper back, and chest.
3. Hold 15 to 30 seconds.
4. Repeat 2 to 4 times.

[2] SHOULDER BLADE SQUEEZE

1. While standing with your arms at your sides, squeeze your shoulder blades together. Do not raise your shoulders as you are squeezing.
2. Hold for 6 seconds.
3. Repeat 8 to 12 times.

[3] INTERNAL ROTATOR STRENGTHENING EXERCISE

For this exercise, you will need elastic exercise material, such as surgical tubing or Thera-Band.

1. Begin by tying a piece of elastic exercise material to a doorknob.
2. Stand or sit with your shoulder relaxed and your elbow bent 90 degrees (like the angle of the letter "L"). Your upper arm should rest comfortably against your side. Squeeze a rolled towel between your elbow and your body for comfort and to help keep your arm at your side.
3. Hold one end of the elastic band in the hand of the painful arm.
4. Rotate your forearm toward your body until it touches your belly.

5. Keep your elbow and upper arm firmly tucked against the towel roll or the side of your body during this movement.
6. Repeat 8 to 12 times.

[4] ISOMETRIC SHOULDER EXTERNAL ROTATION

1. Stand with your affected arm close to a wall.
2. Bend your arm up so your elbow is at a 90 degree angle (like the letter "L"), and turn your palm as if you are about to shake someone's hand.
3. Hold your forearm and elbow close to the wall. Press the back of your hand into the wall with moderate pressure.
4. Hold for a count of 6.
5. Repeat 8 to 12 times.

[5] ISOMETRIC SHOULDER ABDUCTION

1. Stand with your affected arm close to a wall.
2. Bend your arm up so your elbow is at a 90 degree angle (like the letter "L"), and turn your palm as if you are about to shake someone's hand.
3. Hold your forearm and elbow close to the wall. Press your elbow into the wall with moderate pressure.
4. Hold for a count of 6.
5. Repeat 8 to 12 times.

[6] WALL PUSH-UPS

1. Stand against a wall with your feet about 30 to 60 centimetres away from the wall. If you feel any pain when you do this exercise, stand closer to the wall.
2. Place your hands on the wall slightly wider apart than your shoulders, and lean forward.
3. Gently lean your body toward the wall. Then push back to your starting position. Keep the motion smooth and controlled.
4. Repeat 8 to 12 times.

STATISTICAL ANALYSIS & RESULTS

Statistical analysis for both groups, by using "SPSS 16.0 version". For this purpose the data was entered into Microsoft excel spread sheet, tabulated and subjected for statistical analysis.

Of total 30 subjects, 15 were randomized into kinesiotaping group and other 15 were randomized into Arm sling group. All the subjects completed the entire study protocol as defined, by completion of 3 weeks in the training sessions. The outcome measures of this study are: FINGER BREADTH METHOD-measurement for extent of subluxation, Fuglmeier upper extremity for shoulder function.

DEMOGRAPHIC CHARACTERISTICS

Demographic characteristics of sub-acute stroke patients with kinesiotaping group and armsling group

are shown in Table 1. The mean age of sub-acute stroke patients with kinesiotopeing (n=15) was 49.40 ±9.88 and mean age of Sub-acute stroke patients with armsling (n=15) was 50.61 ±10.12. the mean duration of Sub-acute stroke of KT group was 2.51±1.2 and the mean duration of Sub-acute stroke of AS group was 2.63±2.2. There is no statistical significant difference in the demographic characteristics of Sub-acute stroke subjects with KT and AS group.

TABLE -1: COMPARISON OF DEMOGRAPHIC VARIABLES BETWEEN PATENTS WITH KINESIOLOGY GROUP AND PATENTS WITH ARM SLINGGROUP

VARIABLES	PATENTS WITH KINESIOLOGY GROUP (N=15)	PATENTS WITH ARM SLING GROUP (N=15)	P -VALUE (2-TAILED)
AGE* :YEARS	49.40 ±9.88	50.61 ±10.12	0.512
GENDER: MALE: FEMALE	7:8	7:8	X ² =1.24 P=0.561
SIDE: R:L	8:7	7:8	X ² =0.54 P=0.875
STROKE DURATION*(YEARS).	2.51	2.63	0.12

*Data are expressed as mean ±SD; SD= Standard deviation;R=Right, L=Left; KT = kinesiotopeing; AS = armsling .

To compare the pre and post treatment effects within the groups, the simple t-test was used. Then the paired t-test has used between the outcomes values of kinesiotopeing group and armslinggroup.

TABLE- 2: ANALYSIS OF COMPARISON WITH IN OUTCOME MEASURES OF EXPERIMENTAL GROUP 1 BETWEEN PRE AND POST VALUES OF FINGER BREADTH AND FMUE.

CATEGORIES	N	MEAN	SD	T-VALUE	P-VALUE
FBPRE	15	1.48	0.180	3.26	0.01
FBPOST	15	1.12	0.152		
FMUEPRE	15	44.66	8.86	11.72	0.01
FMUEPOST	15	52.47	10.64		

Result: The results shows that the pre and post mean values of FB And FMUE are significant at 0.01 in kinesiotopeing group.

FIG 1&2: FOLLOWING GRAPHICAL REPRESENTATION SHOWS COMPARISON OF PRE AND POST MEAN ± STANDARD ERROR VALUES CHANGE IN FB AND FMUE OF EXPERIMENTAL GROUP 1 [KINESIO GROUP].

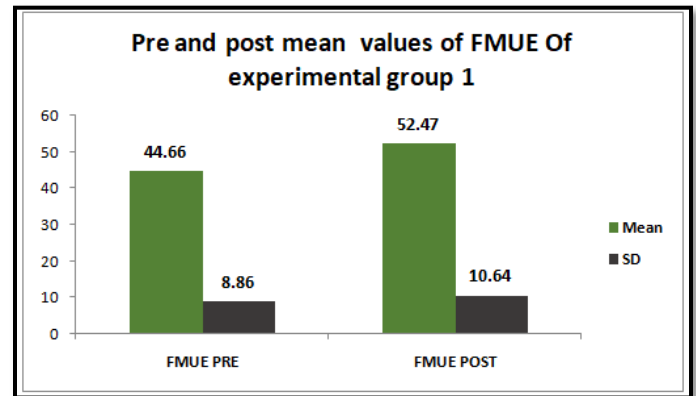
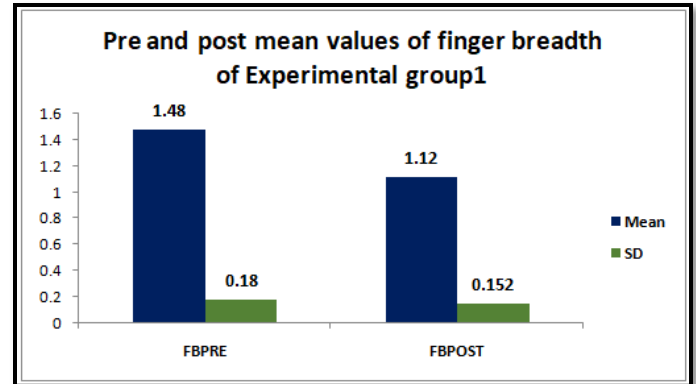


TABLE- 3: ANALYSIS OF COMPARISON WITH IN OUTCOME MEASURES OF EXPERIMENTAL GROUP 2 FB AND FMUE.

CATEGORIES	N	MEAN	SD	T-VALUE	P-VALUE
FB PRE	15	1.45	0.121	4.61	0.01
FB POST	15	1.24	0.169		
FMUEPRE	15	44.33	8.82	4.18	0.01
FMUEPOST	15	51.60	10.12		

The table 3 shows the descriptive measures such as the mean, standard deviation along with t-statistics and significance.

*Data expressed as mean ± SD; SD = standard deviation; FB and FMUE;

RESULT: The results shows that the pre and post mean values of FB AND FMUE are significant at 0.01 in Control group.

FIG 3&4: FOLLOWING GRAPHICAL REPRESENTATION SHOWS COMPARISON OF PRE AND POST MEAN ±STANDARD ERROR VALUES IN FB AND FMUE IN EXPERIMENTAL GROUP 2.

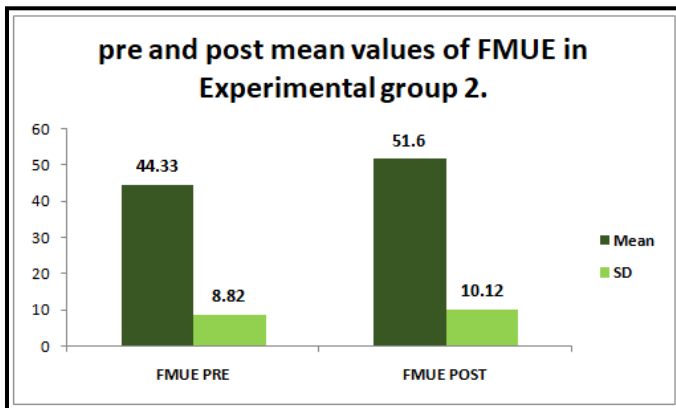
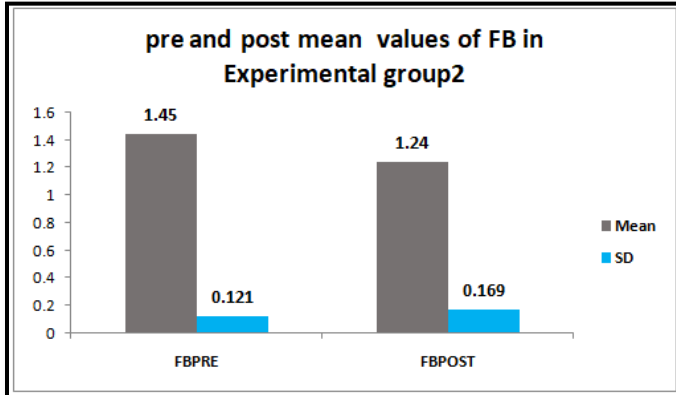


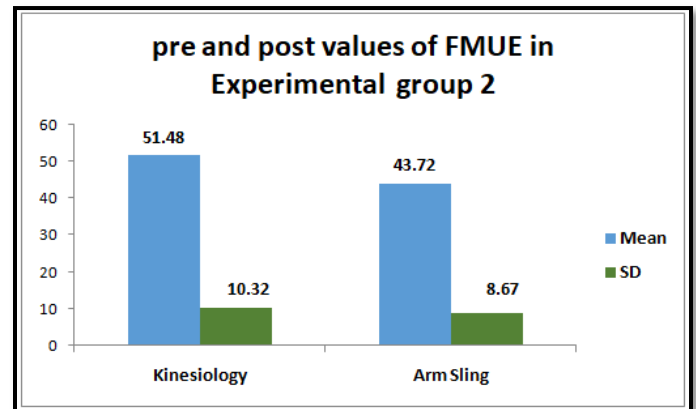
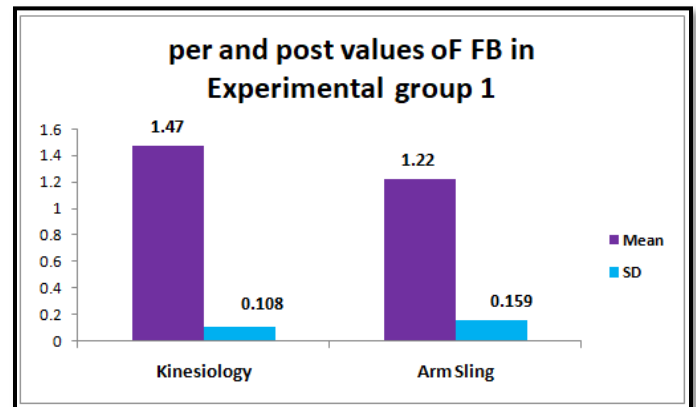
TABLE: 4: ANALYSIS OF COMPARISON WITH IN OUTCOME MEASURES OF EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP2 BETWEEN PRE AND POST MEAN VALUES OF FB AND FMUE.

CATEGORIES	N	MEAN	SD	T-VALUE	P-VALUE
KINESIOLOGY	15	1.47	0.108	5.67	0.01
ARM SLING	15	1.22	0.159		
KINESIOLOGY	15	51.48	10.32	14.65	0.01
ARM SLING	15	43.72	8.67		

Table 4 shows the descriptive measures such as the mean, standard deviation along with t-statistics and significance.

RESULTS: The results FB and FMUE test were found to be statistically significant in both Finger breadth method (p-value= 0.01*) and Fugal mayer upper extremity (p-value= 0.01*) parameters. But the mean response in Experimental group is high in FB and FMUE test parameters when compared to mean response in Control group.

FIG 5&6: FOLLOWING GRAPHICAL REPRESENTATION SHOWS COMPARISON OF PRE AND POST MEAN VALUES ±STANDARD ERROR VALUES INFB AND FMUE OF EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2.



RESULTS

In the present study after the application of kinesio taping, extent of Subluxation in sub-acute stroke patients was significantly decreased and functional capacity of the shoulder was improved compared with the other intervention (arm sling).There is a significant improvement in both the groups [kinesiology group and armsling].but there is more improvement in kinesiology group than the armsling group

DISCUSSION

The Kinesio Taping method is a rehabilitative taping technique, providing support and stability to muscles and joints without restricting the body’s range of motion within the clinical setting. Subluxation is associated with multiple factors including frozen shoulder flaccid upper limb spasticity, rotator cuff lesion shoulder hand syndrome. The most important factor is the position of the scapula on the thorax .The scapula is normally held on the thorax at the angle of 30 degrees from the frontal plane. When the slope of the glenoid fossa becomes less oblique and no longer faces upwards, the humerus slides down the slope the fossa and leads to inferior subluxation^[5].In the present study after the application of kinesiotaping, extentof Subluxation in sub-acute stroke patients was significantly decreased and functional capacity of the

shoulder was improved compared with the other intervention (arm sling). The results of this study are consistent with earlier studies.

Min-Yeong Heo, MS et al conducted a study with 18 stroke patients the changes in pain and shoulder joint subluxation were investigated of acute stroke patients who received inelastic taping, results show that shoulder subluxation in the experimental group decreased from 31.2 ± 3.2 before the intervention to 25.0 ± 4.3 after four weeks of the intervention, and to 21.0 ± 4.8 after eight weeks of the intervention. The control group showed a change from 31.06 ± 3.589 before the intervention to 28.06 ± 4.832 after four weeks of the intervention, and to 25.7 ± 5.0 after eight weeks of the intervention. This means subluxation in the experimental group decreased more than in the control group.^[13] Yu-Chi HUANG et al conducted a study with Forty-four sub-acute stroke patients with hemiplegia. Therapeutic KT may limit the development of HSP and improve pain-free shoulder flexion in sub-acute stroke patients at risk during rehabilitation. Conventional inpatient rehabilitation with 3-week therapeutic and sham KT resulted in similar improvement of upper extremity function, daily activity, and quality of life without further shoulder soft tissue injury in sub-acute stroke patients.^[6] In the present study, the 30 Sub-acute stroke patients with shoulder subluxation were included in the study as per inclusion criteria and randomly allocated into two experimental groups. Group -I received kinesiotaping technique with physical therapy exercises for 3 weeks, group-II Arm sling technique with physical therapy exercises for 3 weeks was given. Finger breadth for measurement of shoulder subluxation and FMUE shoulder function values are measured before the intervention on first day and after 3 weeks period. Decreased shoulder subluxation and showed improvement in shoulder function after 3 weeks. Table 4: shows that both the kinesiotaping technique and armsling technique were effective in improving shoulder function and decreases the shoulder subluxation of sub-acute stroke subjects in both the groups, but the subjects in kinesiotaping group showed a significant improvement than arm sling technique group in terms of FB and FMUE of Sub-acute stroke subjects with Subluxation ($p = 0.01$). The results obtained in this study clearly stated that the KT is more effective than armsling on Finger breadth and FUGAL MAYER upper extremity in sub-acute stroke subjects with shoulder subluxation. The results of this study showed that FINGER BREADTH method FMUE of sub-acute stroke subjects with Shoulder subluxation after kinesiotaping treatment is specific to the treatment (KT than ARMSLING). The study was based on the hypothesis that repeated kinesiotaping for 2 weeks to shoulder subluxation improved functional ability by supporting the joint structure and improving the joint position sense. Dirk CAMBIER et al done a study on twenty-eight stroke patients, with severe upper limb impairments, were randomly allocated to 3 groups (Actimove, Shoulderlift, No sling). Patients wore their supportive device for 6 weeks and no sling in the control group. The present findings

indicate that not wearing the sling does not seem to prevent pain and shoulder subluxation.

In all studies recruited for the study, kinesiotaping technique to shoulder showed improvement on shoulder function and decreases the subluxation in sub-acute stroke subjects. KT stimulates cutaneous mechanoreceptors at the taped area, and this stimulation affects ROM.^[15] The mechanism of taping is improvement of muscle strength by excitation of gamma motor nerves in skeletal muscle, as the taped part raises the tension of the fiber. An additive effect occurs by stimulating many nerve fascicles that compose synapses simultaneously through taping. Finally, an irradiation phenomenon occurs in the area of increased reaction strength.

KT leads to improvement not only decreases the subluxation but also improves the shoulder function through muscle facilitation in the paralyzed parts of the body. KT effectively stimulated the proprioceptive sense, muscle spindles, Golgi tendons, etc., and strengthened muscles in the affected parts.^[22] "The effect of an arm sling used for shoulder support on gait efficiency in hemiplegic patients with stroke using walking aids". Study concluded that statistically significant positive correlation was observed between KT and ARM SLING on Shoulder subluxation and function in sub-acute stroke subjects ($p=0.01$). Study suggests that hemiplegic arm support with an arm sling results in improvement of gait efficiency in hemiplegic patients using a single-point cane^[7]

CONCLUSION

The present study on comparison between effect of kinesiotaping and Armsling on sub-acute stroke subjects with shoulder subluxation on shoulder function and extent of subluxation has shown difference in both groups. Hence, the study concludes that kinesiotaping along with physical therapy exercises is more effective than Arm sling to improve shoulder function and decreases Shoulder subluxation in sub-acute stroke subjects with Subluxation.

LIMITATIONS

- The sample size is small.
- Study duration is only 3 weeks.
- No follow up period.

RECOMMENDATIONS

- Long term follow up is required.
- The study can be done with other taping techniques and other physical therapy exercises.
- The study can be done with large sample size.

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