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# Transcutaneous Electronics Ns And Unilateral Neglect After An Acute Stroke: A Randomized Controlled Trial

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## ABSTRACT:

Transcutaneous electronics nerve stimulation may be effective in treating unilateral neglect following an acute stroke, but this is uncertain. In situations of perceptual impairment such unilateral neglect, transcutaneous electronics nerve stimulation's stimulatory actions can help with the sense of touch sensation. The goal was to ascertain whether transcutaneous electronics nerve stimulation (TENS) or conventional treatment had a better effect on unilateral neglect after an acute stroke. A total of 80 stroke victims had their health condition evaluated. One of two groups—interference or control—was randomly allocated to a total of twenty-four patients. The same drug was administered to both groups once daily for 20 minutes. Transcutaneous electronics nerve stimulation was administered to the intervention group for five days, 25 minutes per day. The differences between the intervention and the control group for the line bisection measure, index are 2.49 0.97, 9.08 1.56, and 21.25 4.82 and 0.40 0.17, 3.33 1.15, and 10.00 4.76, respectively. Comparison group of line split test, Catherine Bergego scale and Barthel index proved to be statistically significant (p 0.001).

**Key words:** nerve, index, Transcutaneous, stimulation, unilateral,

## 1. Introduction:

WHO defines a stroke as "rapidly developing clinical evidence of localised or complete abnormalities of brain function, with symptoms lasting twenty-four hours or more, and terminating in death with no evident cause other than vascular origin [1]." 1 A stroke is expected to occur in India on average once every 84 to 262 people in rural regions and once per 334 to 424 people in urban areas. In rural areas, the annual rate of stroke was 124 per 100000, while in urban areas it was 145. In India, the average age of set of stroke is 63–65 for men and 57–68 for women. 2, 3, and 4.

UNILATERAL NEGLECT, also known as Hemineglect, or spatialneglect, is a disabling disorder that occurs after a brain injury and causes patients to forget information on at least one side of the brain [2]. Neglect is most noticeable and long-lasting when the right side of the brain is damaged, such as after a stroke. People with right-sided brain injuries often forget about objects on their left side, showing a disdain for items on the left. After a right hemisphere stroke, unilateral carelessness can be anywhere between 10% and 82 percent, and after a left hemisphere stroke, anywhere between 15% and 65 percent [3]

[4]The term "TENS" refers to the therapeutic use of an electric current produced by a device to activate nerves (TENS). Although the term TENS is often misused to describe the pulses generated by portable stimulators often used to treat pain, it actually refers to the entire spectrum of transcutaneously administered currents used for nerve stimulations.

[5]Two or more electrodes are normally used to attach the device to the skin surface. The pulse width, frequency, and strength of standard battery-operated TENS devices can all be modulated. Transcutaneous electronics nerve stimulation is used at a high frequency in this research.

## **2. OBJECTIVE OF THE STUDY**

Compared with transcutaneous electrical nerve stimulation, use is made ot assess the impact of unilateral neglect on routine care following acute stroke.

### **2.1 HYPOTHESIS**

An experimental hypothesis and null hypothesis state that TENS following an acute stroke may affect unilateral neglect more than routine care [6].

## **3. REVIEW OF LITERATURE**

According to [7] on the use of a rehabilitation programme for unilateral neglect (N=13 chronic unilateral neglect patients, the use of peripheral stimulations was not shown to be any more beneficial than visuo-spatial training in terms of improving outcomes. undertook a systematic assessment of treatment options for unilateral neglect after stroke (12 RCTs, 277 participants) and found that prism adaptation and repeated TMS were the most popular approaches, whereas burst stimulation appeared to be a novel one [8-10] conducted a randomised controlled cross-over trial on 29 chronic stroke survivors to investigate the effects of transcutaneous electrical nerve stimulation on power, proprioception, balance, and mobility.

They found that stimuli affected proprioception more positively than they affected balance. According to an intervention study done by 8 [11] on 22 stroke patients to see if TENS may reduce neglect-related postural instability after stroke, TENS significantly & consistently reduced fall risk in the neglect patients. With  $r=0.84$  to  $r=0.93$ , the line bisection test's test-retest reliability was shown to be excellent in patients with

widespread lesions, left hemispheric lesions, right hemispheric sores, and hospital controls. After studying the psychometric characteristics of the CBS, it was found that it was more sensitive than traditional paper and pencil exercises. [12] Conventional statistics and Rasch analysis both demonstrate the validity and reliability of the CBS, as well as the fact that the 10 items accurately reflect a single construct. The Barthel Index is an ordinal scale that measures ADL and mobility-related success in daily life. Its internal accuracy range, according to Cronbach's alpha measurements, is 0.87 to 0.92. The kappa result after review and testing is 0.98.12.

#### 4. METHODOLOGY

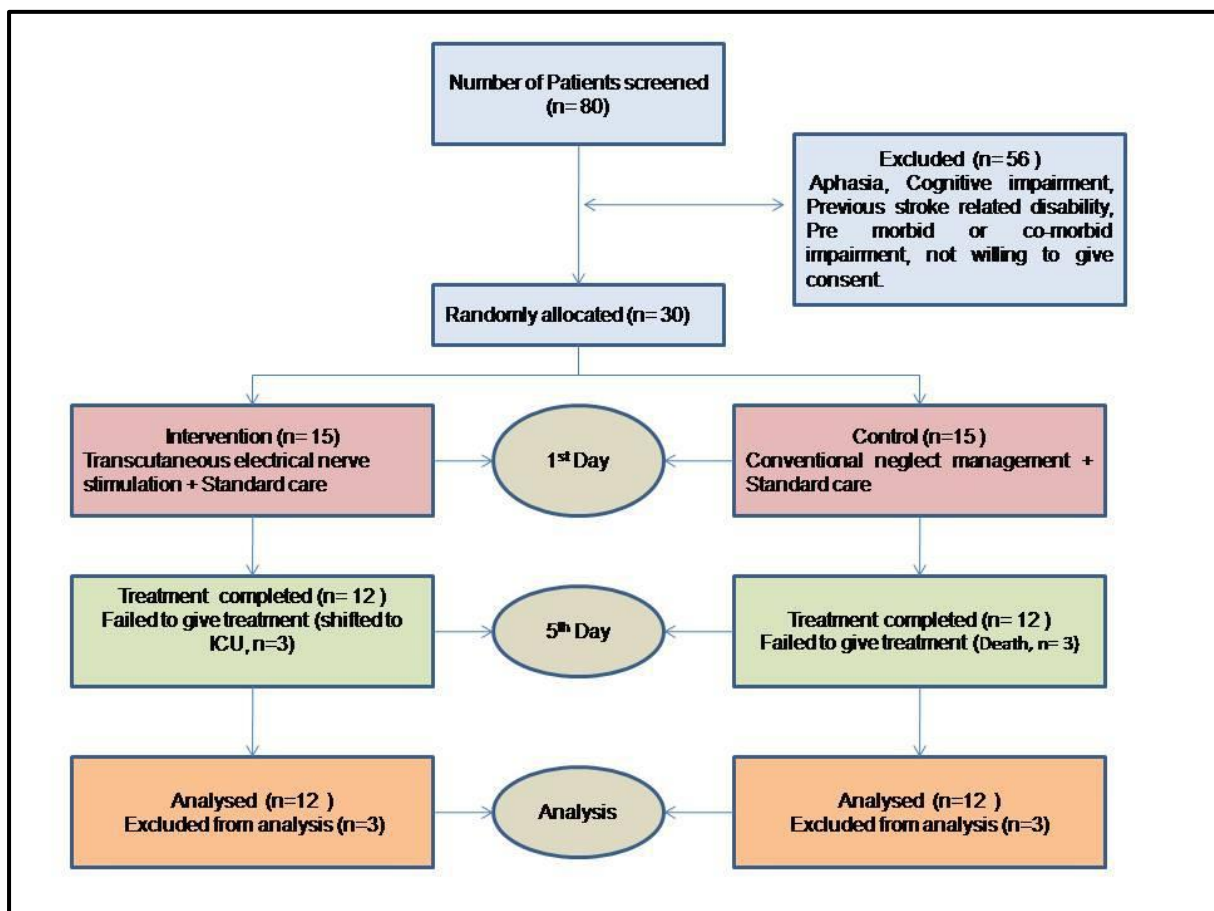
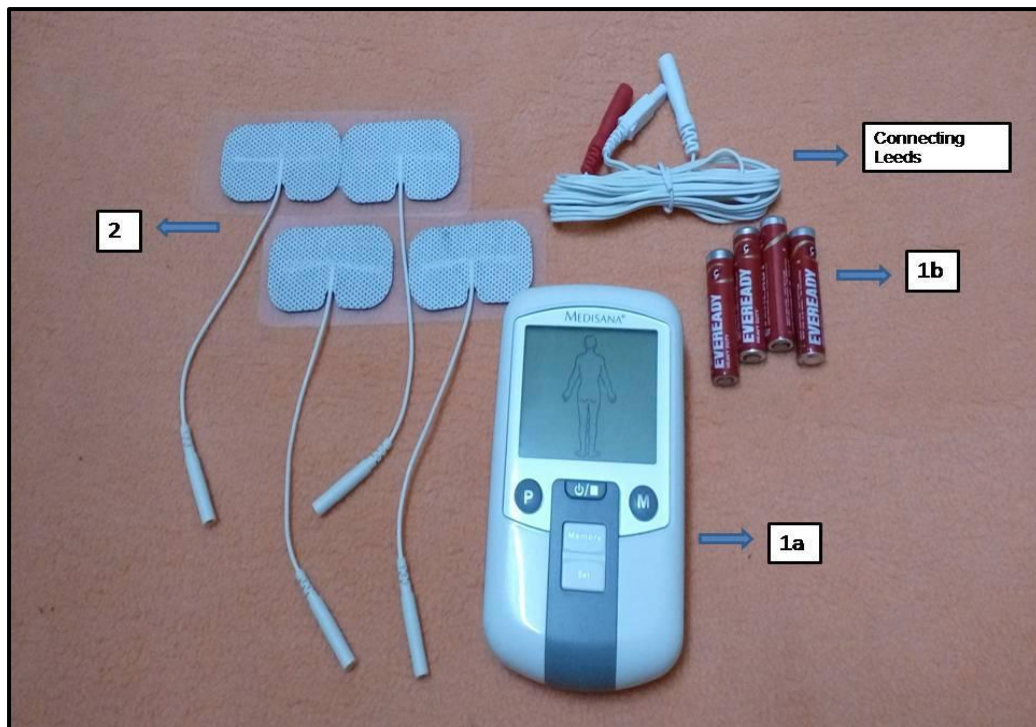


Figure 1: Participants sample flow chart



**Figure 2: Accessories & Equipment**

## 5. TREATMENT

### 5.1 Intervention group in Group A (TENS and Standard Care)

The patient's neck was wrenched to the right while he was on his back. The areas below the occiput and the posterolateral portion of the spine were cleansed. [13]Place the posterior portion of the sternocleidomastoid muscle on the opposite side of the lesion and the two TENS electrodes below the occiput immediately lateral to the spine (TENS). Stimulation can persist for five days and 20 minutes each day in addition to routine treatment. The transcutaneous electronics nerve stimulation used pulses that were 200 seconds wide and apart in frequency.

### 5.2 Group B: The Control Group (CNMSC)

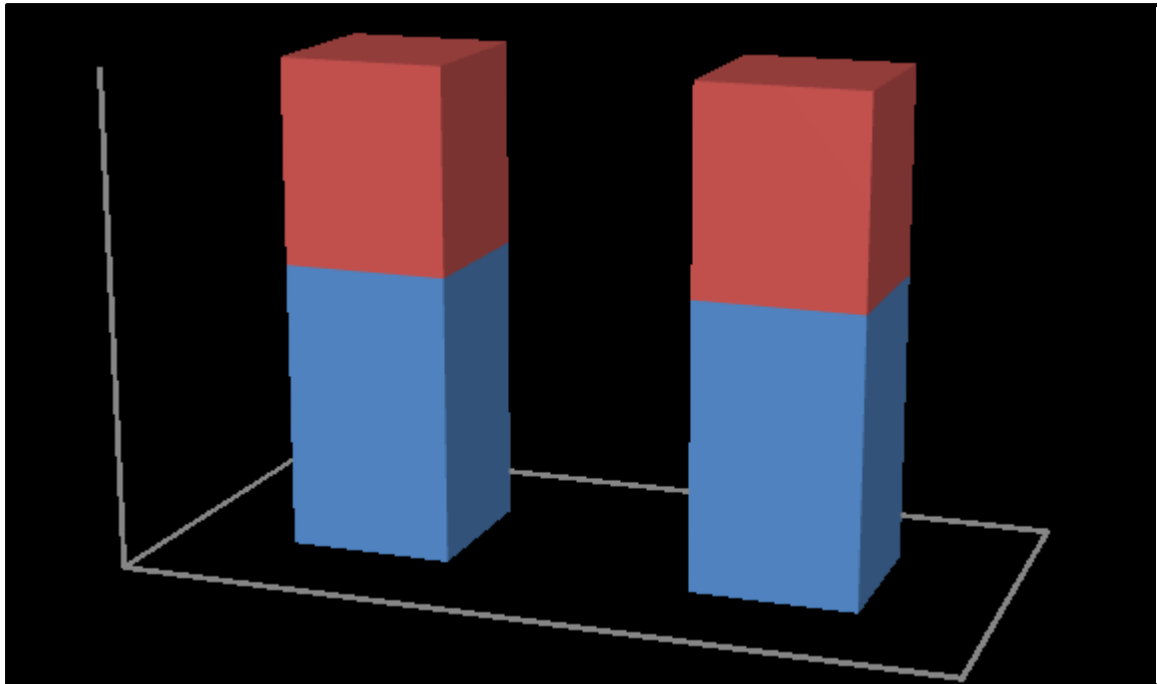
[14]Rolling, bridging, side lying to sit, supported sitting, supine to side lying, PNF patterns, chopping movements, and lifting techniques on the affected side are all exercises for bed mobility. Standard care was offered for 20 minutes per day for five days.

## 6.RESULTS

### Statistical analysis

The basic characteristics of the stroke population, such as gender and age, were estimated using descriptive statistics like mean and standard deviation. Between control and intervention groups. The required binomial test for the Barthel index, the Catherine Bergego scale and the Wilcoxon sign rank test were used to examine within-group variance. For the Line bisection test, the independent sample test was employed to investigate the group differences between the control and intervention groups both

before and after treatment. Using Pearson correlation, the Catherine Bergego scale and Barthel index were examined to ascertain their association.



**Figure 3: Sexes represented in the control and intervention groups**

## **7. DISCUSSION**

The study's goal was to investigate how transcutaneous electronic nerve stimulation affected unilateral neglect after an acute stroke. The intervention group's lower incidence of unilateral neglect suggests that both the severity of neglect and functional independence in everyday tasks have decreased. Perennou et al. (2001) found that transcutaneous electrical nerve stimulation significantly and consistently decreased postural instability in neglect patients, offering clinical evidence for the postural body scheme hypothesis. Although changes in the outcome measures imply improved postural stability, the effects on postural stability were not evaluated in this experiment.

## **8. CONCLUSIONS**

According to the findings of a single blinded randomised controlled study, transcutaneous electronics nerve stimulation combined with normal care may help reduce the presence and severity of unilateral neglect following an ischemic stroke. Transcutaneous electrical nerve stimulation, as opposed to conventional neglect therapy, improves daily living behaviour after an acute stroke.

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