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A Comparative Study To Check The Effectiveness Of Cranio-Base Release With Or Without Topical Analgesic In Cervicogenic Headache Among Young Adults.

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Abstract:

Background: Within the range of headache diseases, cervicogenic headaches pose a unique difficulty. It is characterized by pain that radiates from the cervical spine to the brain known to have complex musculoskeletal and neurological etiology, the upper cervical spine more especially, the suboccipital region is oftentimes identified as a key anatomical location involved in the origin of severe headaches. The suboccipital region is home to an intricate network of neuronal pathways, muscles, and ligaments. This region's dysfunction is frequently cause cervicogenic headaches, which is how the skull base release approach came to be. This therapy approach targets the musculoskeletal structures and neural pathways within the upper cervical spine particularly in order to address these subtleties.

Materials and Methods: The Study Design is Experimental study design which includes age ranged from 18 to 30.The 60 subjects was selected on the basis of inclusion and exclusion criteria and equally divided into two groups Group A (15 men and 15 women by using topical analgesics in conjunction with cranial base release) Group B consisted of (15 male and 15 female patients who only underwent cranial base release). They complained of headaches when they went to the Mittal Hospital in Aligarh; a neurologist diagnosed them and recommended physiotherapy. Every patient got information regarding potential risks and give their informed consent to participate.

Results: The result shows that values of pre-test and post-test NPRS scores reduced significantly thus concluding experimental Group A was significant than experimental group B. The experimental group A is significant than control group B.

Conclusion: This study investigated the effectiveness of cranio-base release with or without topical analgesic in cervicogenic headache among young adults. The experimental group-A i.e. topical analgesic with CBR reduced pain significantly as compared to pre and post test. Both genders received the same level of prognosis in this investigation. Hence, null hypothesis is rejected and alternate hypothesis is accepted.

Key Word: CBR, Cervicogenic headache, Topical Analgesic, Counter irritant.

INTRODUCTION

Cervicogenic headaches present a distinctive challenge within the spectrum of headache disorders, characterized by pain originating in the cervical spine and radiating to the head. Recognized for intricate etiological factors involving musculoskeletal and neural elements, the upper cervical spine, specifically the suboccipital region, is frequently identified as a pivotal anatomical locus implicated in the genesis of these headaches (1).

The suboccipital region, situated at the base of the skull, houses a complex network of muscles, ligaments, and neural structures. Dysfunction in this area is often associated with cervicogenic headaches, leading to the emergence of the cranium base release technique. This therapeutic modality is designed to address these intricacies by specifically targeting the musculoskeletal structures and neural pathways within the upper cervical spine (2).

Within the framework of the cranium base release technique, practitioners employ manual manipulations to release tension and improve the mobility of cranial and cervical structures. By restoring the balance and functionality of these anatomical elements, the technique aims to alleviate the underlying causes of cervicogenic headaches. The interventions applied during cranium base release are tailored to address the biomechanical intricacies of the suboccipital region, aiming to normalize muscle tone, improve joint mobility, and enhance overall structural integrity (3).

While the cranium base release technique holds promise in the management of cervicogenic headaches, the integration of topical analgesics introduces an additional dimension to this treatment paradigm. Topical analgesics, encompassing substances like menthol, lidocaine, or NSAIDs, are applied directly to the skin overlying the affected area. This adjunctive approach is designed to offer localized pain relief, potentially complementing the effects of the cranium base release technique (4).

Medication administered topically to the skin to reduce pain and inflammation is known as a topical analgesic.(5) They are available in a variety of forms, including sprays, gels, creams, and patches, and they frequently include salicylates, menthol, lidocaine, and capsaicin. These medications are usually regarded as safe when used as prescribed and can be useful for treating localized pain, such as aches in the muscles, discomfort in the joints, or small injuries. But, it's crucial to carefully follow the directions and speak with a medical expert if you have any questions or underlying medical issues. By obstructing pain signals at the application location, topical analgesics function. Depending on the active components, they can accomplish

this in a few different ways:

1. Counter irritants: Ingredients like menthol or camphor, which produce a warming or cooling feeling on the skin, are used in some topical analgesics. This feeling aids in detracting from the underlying discomfort.

2. Capsaicin: Made from chili peppers, capsaicin creams reduce pain over time by lowering substance P, a neurotransmitter involved in pain signal transmission.

3. Salicylates: Methyl salicylate and other salicylate-containing topical analgesics function by lowering inflammation and obstructing pain signals.

4. Nonsteroidal anti-inflammatory medications (NSAIDs): By preventing the synthesis of prostaglandins, NSAIDs like ibuprofen and diclofenac lessen pain and inflammation. These drugs are a component of certain topical analgesics.(6)

Cervicogenic pain can be effectively managed with topical analgesics. Lidocaine, capsaicin, or NSAID-containing lotions, gels, or patches are among the options. These products provide localized relief and can be particularly useful for targeting specific areas of discomfort in the neck and surrounding muscles. For cervicogenic discomfort, it's crucial to speak with a healthcare provider to figure out the best course of action. Cervicogenic headache is a type of headache that originates from issues in the cervical spine (neck). It can be caused by conditions such as cervical disc degeneration, whiplash injury, or cervical osteoarthritis. Symptoms often include pain on one side of the head or face, stiffness in the neck, and sometimes pain radiating from the neck to the head. Treatment may involve medications, physical therapy, chiropractic care, or in some cases, injections or surgery.(7)

A tool for measuring pain severity is the NPRS (Numeric Pain Rating Scale), which has a scale from 0 to 10, with 10 denoting the worst possible agony. It is frequently used to measure and track patients' pain levels in medical settings. Patients with acute or chronic pain are often assessed for pain severity using the NPRS (Numeric Pain Rating Scale). It is frequently used to track and control patients' pain levels in medical settings like clinics, hospitals, and rehabilitation facilities. The discipline of pain evaluation, which has been the subject of medical study and practice for centuries, is where the Numeric Pain Rating Scale (NPRS) got its start.(8)

On the other hand, the particular scale itself become a common instrument for measuring pain intensity in more recent decades.(9)

Due to its simplicity and convenience of use, the NPRS is preferred by patients with chronic pain above other pain intensity measures like the VAS.(10)

The Efficacy of Cranial Base Release Technique on Postural Instability in Cervicogenic headache patients The study's goal was to investigate how the cranial base release (CBR) approach affected the patients' postural instability who had CGH, Thirty individuals with cervicogenic headaches received MFR treatment in this exploratory trial. For four weeks, the treatment was administered four days a week for twenty minutes each. Win track was utilized both prior to and following the treatment regimen to evaluate postural instability. The data was compared before and after therapy using the student t-test. Postural deviation showed a significant improvement ($P<0.05$). These results suggest that sub-occipital myofascial release is a useful therapeutic strategy for addressing postural instability in CGH patients **(**Patra Ramesh Chandra, 2019**)**

The aim of the study is to find the effectiveness of cranio-base release with or without topical analgesic in cervicogenic headache among young adults.

METHODOLOGY:

Study setting: The study was conducted in Physiotherapy department at Mittal Hospital, Aligarh. It is Experimental in nature. Study duration is 4 weeks. The purposive sampling technique was adapted based on the following inclusion and exclusion criteria.

In the present study, The 60 subjects were selected on the basis of inclusion criteria. Each group consist 30 subjects.

Intervention:

GROUP A: The subjects was given topical analgesics with cranial base release as intervention .The duration of intervention was 3 mins followed by 1 mins rest, total of 5 session for total 20 minutes.

GROUP B: The subjects was given only CBR. The duration of intervention was 3 mins followed by 1 mins rest, total of 5 session for total 20 minutes.

The Variables:

- **Dependent variables**: Pain
- **Independent variables:**
  1. CBR with topical analgesic
  2. CBR only

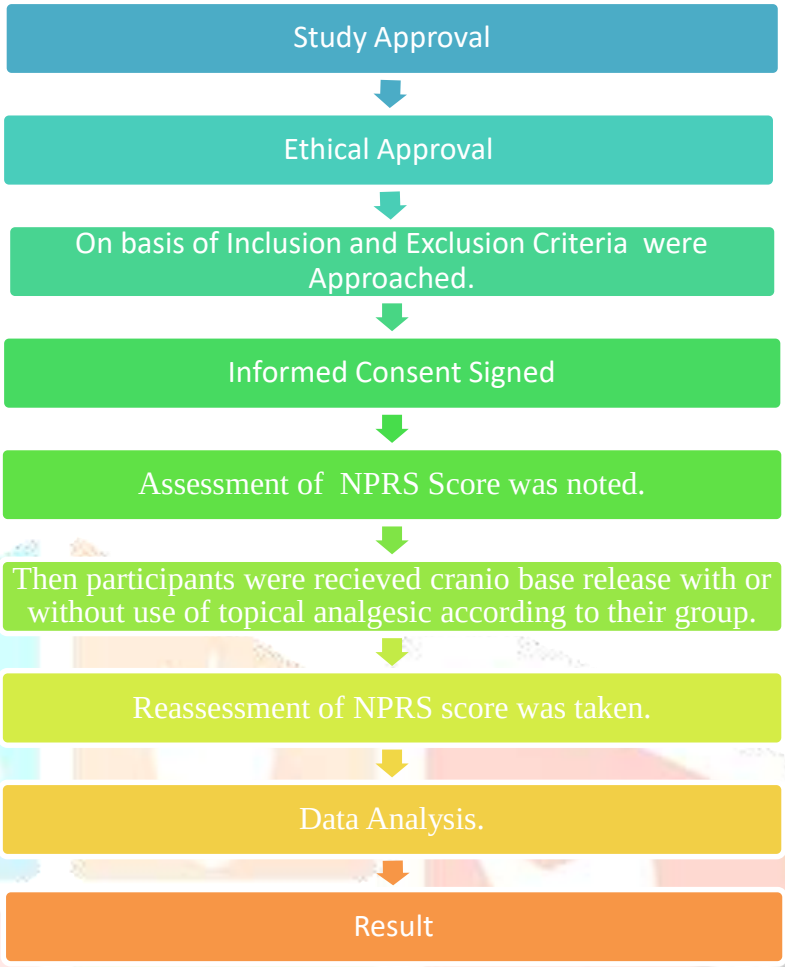
Inclusion criteria:

1. Cervicogenic headache
2. Both male and female
3. Age group 15 to 30 years

Exclusion criteria:

1. Headache resulting from traumatic injury
2. History of recent head surgery.
3. Fracture of cervical spine.
4. Tumors
5. Infections (like meningitis)
6. Migraine headache

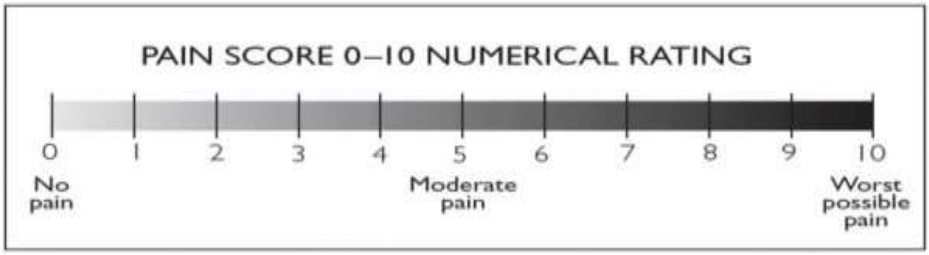
FLOW CHART OF STUDY



Orientation to the subject: All patients was instructed about potential risk and provided their informed consent for participation for their knowledge so they can withdraw any time.

Before collection of data, all the subjects were explained about the purpose of study. The investigator has to give a detailed orientation about the various test procedures such as NPRS to measure pain. The concern and full co-operation of each participant was sought after complete explanation of the procedure involved in the study.

Numeric pain rating scale (NPRS) is used as outcome measures. The grades according to pain score was given below, "No pain" is represented by a score of '0' on the 11-point numerical scale, while "pain as bad as you can imagine" or "worst pain imaginable" are represented by a score of '10'.[53]



Results:

The data was analyzed on 61 participants for this study to identify the Pre- Post NPRS. And Duration of Headache. Out of 61 participants 32 (52%) males were participated for this study and females were 29 (48%) participated for this study

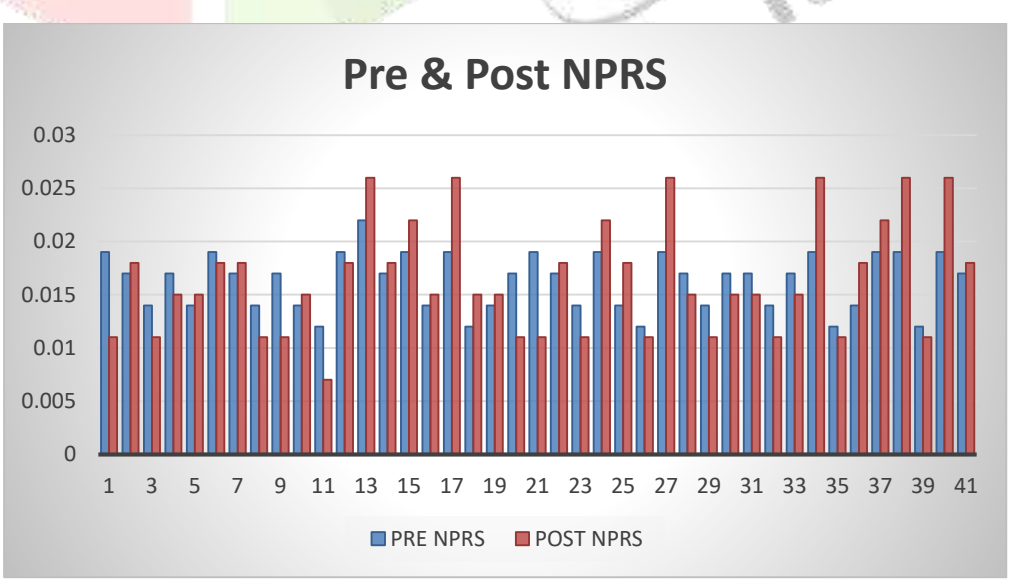
Out of this data, repeated measures ANOVA summary, F value was 965.7 and no sphericity were found in the data. And also the data was statistically significant (P <0.05). Geisser greenhouse epsilon was 0.6638 which indicates that sphericity assumption was violated. R squared value was 0.9415 which is indicated a better fit. After then matching effectiveness was measured with ANOVA which shown F value 1.157 indicated that variance between is probably the source of most of the variance in the total sample, p value for the matching effectiveness is 0.2310 indicates that no significant matching and R squared was 0.02207 indicating the unfit.

Treatment (between columns) sum of square was 19619, degree of freedom was 3, Mean standard was 6540. F (1.991, 119.5) = 965.7, Individual (between rows) sum of square 470.3, degree of freedom was 60, Mean Standard was 7.839, F (60, 180) = 1.157 and Residual (Random) sum of square was 121, degree of freedom was 180, Mean Standard was 6.772, overall average value for sum of square was measured 21308 and degree of freedom was 243.

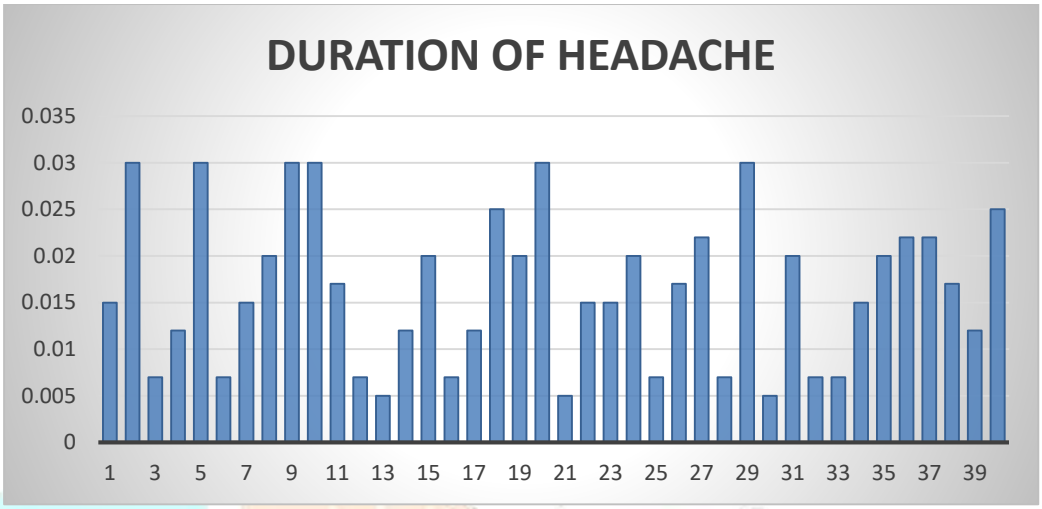
On the basis of age factor the Highest Upper Limit was 0.903 and lowest lower limit was 0.396. Highest upper limit for Pre NPRS was 0.411. On the basis of Lowest lower limit for Pre NPRS was 0.051. For Post NPRS, the highest upper limit was 0.350 and lowest lower limit was 0.011

Highest rating for Post NPRS were crossing the peak at 0.025 in many patients and highest rating for Pre NPRS was in between 0.02 and 0.025 in only single patient.

Lowest rating for Pre NPRS was in between 0.01 to 0.015 in many patients, and lowest rating for Post NPRS was in between 0.005 to 0.01 in only single patient.



In this study, we also measured the duration of headache with the help of samples and data which analyzed in SPSS Software. In which 0 is the no headache and above the zero determined the duration of headache. Below the bar graph is determining duration of patients. Higher duration was 0.03 in which six patients were involved, in this sample size, the patient having shorter duration of headache was 0.1- 0.05 in which some patients are involved.



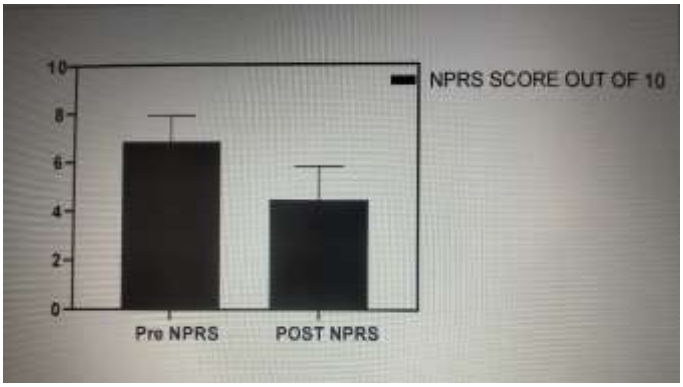
Average mean age was 0.0164, Average mean of Pre NPRS was 0.0163, Average mean of Post NPRS was calculated and result is 0.016467, Overall duration of headache including male and females was 0.016333

After this the data was analyzed under the formula of 2way ANOVA, under this alpha was 0.05. Under the source of variation Raw factor the percentage of variation was 2.207 and P value was 0.2310, No significance was seen, sum of square was 470.3 and degree of freedom 60 and mean standard was 7.839 and F (60, 180) = 1.157 and column factor the percentage of variation was 92.07 and p value (<0.0001) and level of significance was seen, sum of square was 19619 and degree of freedom was 3 and mean deviation was 6540 and F (3, 180) = 965.7. Residual sum of square was 1219 and degree of freedom was 180 and mean standard was 6.772

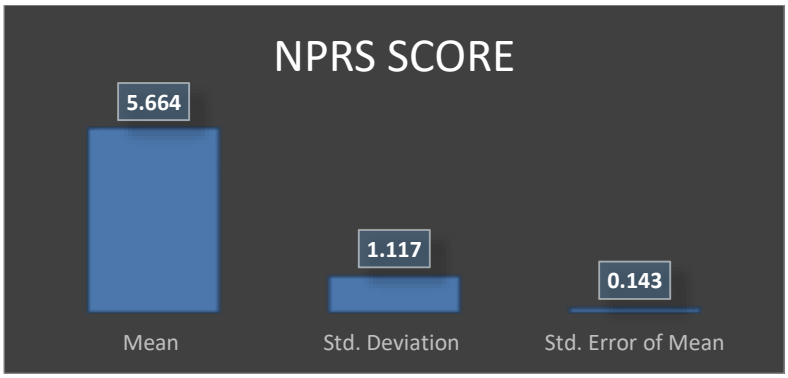
Descriptive statistics was analyzed on the basis of NPRS score out of 10 of overall data, total number of values was 61 and maximum NPRS score was 8.000 and minimum was 3.500 and range was 4.500.

The experimental group A is significant than control group B.

On the basis of Pre and Post NPRS score the bar graph is mentioned below, out of 10 Pre NPRS score was 6-8 and Post NPRS score was 4-6.



Average mean of NPRS score under the descriptive analysis was 5.664 and standard deviation was 1.117 and standard error of mean was 0.1430.



Statistical analysis using ANOVA test showed that there was significant difference between two groups in decreasing pain among adults with cervicogenic headache. The ANOVA test concluded that there was a significant improvement in experimental Group A i.e. CBR with topical analgesic as compared to control group subjects where only CBR was done.

The result from this study helps and encourages the physios to use topical analgesic with CBR as treatment intervention for better pain relief.

CONCLUSION:

This study investigated the effectiveness of cranio-base release with or without topical analgesic in cervicogenic headache among young adults. The Cervicogenic Headache was more Pre- treatment as measured on NPRS scale and post treatment the headache decreases in some degrees but not fully. It means the cranio base topical analgesic is less effective in cervicogenic headache on the basis of this study. There is effectiveness of cranio base release with the use of topical analgesics in cervicogenic headache among adults. The experimental groups reduced pain from the pre-test to the post-test within 4 weeks. Also, this study only looked at age group between the 15-30 years of age. It could also be of interest to examine other age groups within a different regional setting to determine if the treatment protocols will produce a significant change in patients with cervicogenic headache.

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