

# A Comparative Clinical Study on the usefulness of Homoeopathic Medicines from Mineral Kingdom and Other Homoeopathic Medicines in the Management of Chronic Recurrent Sinusitis.

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## ABSTRACT

**Background & objectives:** Sinusitis is the inflammation of mucosal lining of the paranasal sinuses. Based on the duration, classification includes acute sinusitis, chronic sinusitis and recurrent sinusitis. A set of symptoms characterize sinusitis. These include mucopurulent discharges from both anterior and posterior nares, facial pain with sensation of pressure and fullness, obstruction of nostrils and diminished sense of smell. The objective of the study was the clinical understanding of cases of chronic recurrent sinusitis. It also included comparing and evaluating the symptomatic changes in patients before and after treatment with Homoeopathic medicines.

**Methods:** This prospective study has been conducted in 20 cases with medicines belonging to mineral kingdom (Group A) and 20 cases with other Homoeopathic medicines (Group B), randomly selected from the out-patient department of Govt. Homoeopathic Medical College, Kozhikode. Patients of both sexes belonging to almost all socio-economic groups of age group 15-60 years showing signs and symptoms of chronic recurrent sinusitis, were selected for the study. Cases were, studied for a period of one year. Review of each case done at an interval of 2-3 weeks. Repetition, change of remedy and potency, were done following the Homoeopathic principles. The assessment of usefulness of mineral medicines in Group A and other Homoeopathic medicines in Group B depended on the improvement made in SNOT-22 scores taken before and after treatment.

**Result & discussion:** Among mineral medicines, Calcarea carbonica and Silicea showed their indications in majority of cases. However, in a few cases, less important remedies like Fluoricum acidum, Phosphoricum acidum and Calcarea sulphurica also proved their usefulness. Among other Homoeopathic medicines, Pulsatilla and Nux vomica showed their indications in majority of cases. Out of 40 cases, 22.5% cases showed marked improvement in signs and symptoms, 75% showed moderate improvement and 2.5% showed least improvement. Results showed that Homoeopathic mineral remedies are more useful than other Homoeopathic remedies in the management of chronic recurrent sinusitis. Statistical analysis of the study was done using 'Paired-t' test after recording the scores before-treatment and after-treatment. In addition, two groups were compared in the study and hence 'Student-t test' also found its place in the statistical analysis.

**Conclusion:** A one year, comparative clinical, study on the usefulness of Homoeopathic mineral remedies and other Homoeopathic remedies has shown significant effects in the management of chronic recurrent sinusitis. This study concludes that Homoeopathic mineral remedies are more effective than other Homoeopathic medicines in the management of chronic recurrent sinusitis. Apart from this, though indicated only in few cases, the study also brings forward the usefulness of a few less important mineral

remedies, like Fluoricum acidum, Phosphoricum acidum and Calcarea sulphurica in the management of chronic recurrent sinusitis.

**Keywords:** Chronic recurrent sinusitis; Mineral kingdom; Homoeopathic remedies; Calcarea carbonica; Silicea; Fluoricum acidum; Phosphoricum acidum; Calcarea sulphurica; SNOT-22 scores.

## 1. Introduction

Infection of sinus cavities is an extremely common condition. Over years it has become the area of interest for many scientists [1]. A national health survey conducted in 2012 shows that nearly 12 percent of US population falls prey to the inflammation of sinuses. Sinusitis is one of the common causes for morbidity. Certain sources point out that one-half million working days are lost every year in Great Britain due to sinusitis. The term, sinusitis was replaced by rhinosinusitis in the updated guidelines, as the inflammation of sinuses is always accompanied by inflammation of nasal mucosa. Rhinosinusitis forms the fifth common disease that account for antibiotic therapy. It accounts for 30 million annual diagnoses in US. It affects 1 in 8 adults [2]. Nearly 20% of patients with rhinosinusitis have nasal polyps. Thus, based on the presence and absence of nasal polyps, Chronic Rhinosinusitis (CRS) was classified into chronic rhinosinusitis with nasal polyps and chronic rhinosinusitis without nasal polyps. Chronic rhinosinusitis with nasal polyps is one of the common indications for surgery [3].

There are various factors, which predispose to occurrence of acute and chronic rhinosinusitis. Various studies have shown a direct relationship between sinusitis and pollutant levels of carbon monoxide, nitrous oxide, Sulphur dioxide and particulate matter. Specific components of air namely Sulphur dioxide, ozone and formaldehyde (an indoor pollutant) have proved to have a profound effect on mucociliary clearance. Other indoor factors like dampness or mold also increase sinusitis. Active cigarette smoking also contributes largely in the pathogenesis of chronic rhinosinusitis. Yet certain studies show a strong relationship between chronic rhinosinusitis and severity of bronchial asthma. Certain sports activities like water sports, swimming etc. easily aggravate the existing inflammatory state of sinuses. Dental caries also contributes to the causative factor of CRS [3].

With regard to immunity, most of the pediatric and adult patients are found to be immune competent. Concerning chronic rhinosinusitis without nasal polyp (CRSsNP), characteristic feature is the persistence of symptoms with periodic exacerbations especially with increased facial pressure and increased anterior and posterior drainage. Fatigue is a frequent accompanying symptom. Usually, a low-grade fever follows. A few persons have recurrent attack of acute rhinosinusitis symptoms. Patients with chronic rhinosinusitis with nasal polyp (CRSwNP) usually present with nasal congestion, facial pain, post-nasal discharge, anosmia or hyposmia but lack the features of acute or chronic infection. In such cases if prior surgical specimens show evidence of fungi or show hyper densities on CT, ruling out allergic fungal rhinosinusitis (AFRS) is important. AFRS has certain characteristic features. If a patient fulfills these criteria, AFRS is diagnosed in that patient. These include one or more opacified sinus cavities, hyper-densities on CT and Ig E mediated allergy to fungus [3].

Surgery should never be the first line of choice of management in chronic rhinosinusitis except for the cases of AFRS. Functional endoscopic sinus surgery is the usual surgical intervention that is performed. It intends in restoration of sinus ventilation and drainage. Complete nasal obstruction, orbital abscess, Antro-choanal polyp, fungal rhinosinusitis etc. are the few indications for functional endoscopic sinus surgery (FESS) especially in children [3]. CRS has become a common respiratory disease. The

prevalence rates with regard to United States, were mentioned earlier. About the mainland of China, the prevalence rate equals 8%. This corresponds to nearly 107 million sufferers in China [4].

Radiological evaluation of sinuses is essential in understanding the extent of the disease and in locating the exact site of the disease. Plain radiography, computed tomography and magnetic resonance imaging help to evaluate the status of sinuses [5].

Rhinosinusitis is one of the common diagnoses seen in the primary care institutions. It is one of the causes for morbidity. Depending upon the duration, classification of rhinosinusitis includes acute, sub-acute and chronic rhinosinusitis. Acute rhinosinusitis lasts for less than 4 weeks, sub-acute rhinosinusitis lasts between 4-12 weeks and chronic rhinosinusitis lasts for more than 12 weeks duration. Acute exacerbation is the sudden worsening of the symptoms with return to a baseline state after treatment [6].

The word “sinus” has a Latin origin and stands for a curve, hollow in the land, a bay or a gulf. It also means innermost part of something. The word “antrum” is always associated with Highmore’s name and hence termed as “Highmore’s antrum”. It is also known as maxillary sinus. The word “antrum” originates from the Greek word “άντρον,” (Antron) meaning a hollow in land, cave, or grotto. Ancient Egyptians were the first to identify Para nasal sinuses inside the bones of the skull. During the Egyptian period, mummification was, done by removing the brain through nasal cavities, using special instruments. Hence, Egyptians are famous for sinus surgery. In the Middle Ages, physicians based their practice on theological beliefs. For this reason, Para nasal sinuses were, believed to be, cavities containing oil, which helped in lubricating the orbit and facilitated the movements of eyes. While the Spanish believed that, these cavities helped to drain “malignant spirits” from the brain. Later, scientific community found out drawings of the human anatomical structures made by Leonardo da Vinci. These clearly depicted frontal and maxillary sinuses. He found that there was a close relationship between maxillary sinus and teeth of the upper jaw. Nathaniel Highmore is well- known for his drawings and detailed description of maxillary sinuses. For this reason, maxillary sinus is called as “Highmore’s antrum” [7].

There are variants, which predispose to chronic rhino sinusitis and lead to complications. In a study conducted in 2016, various anatomical variants were recorded which numbered up to 229. Of these, the most common ones were the Pneumatization of the middle nasal turbinate (32.73%), Agger nasi cells (23.64%), Haller’s cells (20.91%), septal deviation (20.18%) and sphenoid sinus septation (18%) [5].

Clinical definition defines RS in adults as inflammation of Para nasal sinuses with two or more symptoms like nasal blockage, nasal discharge, facial pain, reduction or loss of smell joined by endoscopic discoveries like nasal polyps, mucopurulent discharge release from middle meatus, edema of middle meatus and computed tomography (CT) findings showing mucosal changes within ostiomeatal complex. The definition for rhino sinusitis differs slightly in case of children. In addition to all the above criteria, in children, the main difference is replacement of anosmia by cough. Based on the presence of nasal polyps, at the middle meatus, chronic rhino sinusitis (CRS) is, divided in to two namely chronic rhino sinusitis with nasal polyps (CRSwNP) and chronic rhino sinusitis without nasal polyps (CRSsNP) [8].

Broadly, RS is, classified in to acute and chronic. The acute presentation can be mild, moderate or severe. The symptoms of a common cold subside within 5 days. However, that of an acute rhino sinusitis (ARS) worsens after 5 days and lasts for more than 10 days. Acute exacerbations occur in chronic course of the disease which results in aggravation of the existing symptoms. This acute exacerbation resolves temporarily with the medications, but the chronic changes persist. Apart from the chronically inflamed nasal and Para nasal mucosa, there exists, in the chronic presentation of the disease, the cytokine release and tissue remodeling. The latter includes changes in protein deposition, changes in

extra cellular matrix and changes in tissue structure. Various staging techniques, of least use, in daily practice were, formulated. Harvard system by Gliklich and Metson was, found to be more superior and useful when compared to other staging methods. The gross changes in the sinuses divided into 4 stages. The staging is as follows [9].

Staging	Feature
0	- Normal (<2cm mucosal thickening on any sinus wall)
1	- Unilateral disease
2	- Bilateral disease limited to ethmoidal or maxillary sinuses
3	- Bilateral disease, involving, sphenoidal or frontal sinus
4	- Pansinusitis [9]

Homoeopathy proves to have an upper hand in the treatment of rhinosinusitis. Unlike the conventional therapy, Homoeopathy works on certain principles. It identifies the root cause of the disease. The term root cause does not mean the causative organisms usually seen in the disease condition. It means the real derangement that has occurred in the inner man. It also checks whether the maintaining cause still plays a role in the persistence of the disease condition. While treating a patient, it takes into consideration all the hereditary tendencies of the patient and details regarding his past illnesses. This helps us to correlate the search towards any hidden cause. Homoeopathic medicines are prescribed on the basis Similia principle. Change of remedy and potency, are strictly done according to the fixed Homoeopathic principles. According to Homoeopathy, there are Miasms that lay hidden in the interior of man. These get transferred from one generation to the next. This makes diseases persist in man, in its latent state, until death.

By Homoeopathic treatment, sufferings of the patients could be reduced largely without life threatening consequences. Constitutional medicines are prescribed after detailed case taking. Therefore, to prove the usefulness of Homoeopathic medicines, especially those belonging to Mineral Kingdom, a comparative study was undertaken, thus comparing the symptomatic changes before and after treatment with Mineral remedies and other Homoeopathic remedies.

## 2. Materials and Methods

Present study was conducted on randomly selected patients attending the out-patient and in-patient departments at Government Homoeopathic Medical College, Kozhikode.

### Inclusion criteria

- Patients with symptoms satisfying the diagnostic criteria
- Persons between the age group 15 -60 years belonging to both sexes.
- Persons belonging to all socio-economic groups.

### Exclusion criteria

- Patients presenting with complications of sinusitis were excluded.
- Patients with systemic illness were excluded.
- Patients taking other treatments were also excluded.

**Diagnostic criteria**

- Objective signs and clinical symptoms
- X-ray findings (PNS) taken in occipitontental view (water's view). Common findings include mucosal thickening, fluid levels and total opacity.
- Anterior rhinoscopy to detect the presence of polyps in nasal cavity if any.
- Direct visualization by endoscopy in relevant cases.
- CT imaging only for necessary cases.

Ethical clearance was already obtained from the ethical committee meeting held at Government Homoeopathic Medical College, Kozhikode. In addition, a written informed consent from the patients/parents/ guardians, showing their willingness to participate in the study, was also obtained.

A total of 40 cases of the age group 15 – 60 years, fulfilling the diagnostic criteria, were randomly selected for the study. 20 cases of Homoeopathic medicines belonging to mineral kingdom, named as group A. Remaining 20 cases with Homoeopathic medicines that are not minerals, named as group B. Selection of medicine in each case was strictly based on Homoeopathic principles. For acute exacerbation episodes, medicines were given according to acute totality. Constitutional medicines were given strictly after detailed case taking and individualizing. In all cases selection of dose, potency and repetition were strictly done according to the Homoeopathic principles. Cases were studied for a period of one year with each case reviewing at an interval of 2–3 weeks. Study includes cases from out-patient and in-patient departments of Government Homoeopathic Medical College, Kozhikode.

As randomization is difficult during limited period of time and limited availability of cases, purposive sampling was done. Cases were selected on the basis of signs and symptoms of the patient and x-ray findings. The method of approach used is a clinical type of study without the use of controls. All cases were subjected to detailed case taking and appropriate investigations. The cases were recorded in a standardized case record formulated for the purpose. A regular follow up of the patients at an interval of 2- 3 weeks was taken up. Outcome measurement is made on the basis of SNOT-22 scaling brought forward by Washington University in 2006. It consists of 22 criteria which might affect the person during the attacks of CRS. The scoring data is assessed both before and after Homoeopathic treatment.

The symptoms are graded as no symptoms, very mild symptoms, mild/ slight symptoms, moderate symptoms, severe symptoms, symptoms as bad as it could be. The scores given for the intensity of symptoms are 0, 1, 2, 3, 4, and 5 respectively. A maximum of five symptoms, affecting the person to a great extent, have to be noted and assessed. A score of 7 is considered normal and corresponds to a state devoid of CRS. The usefulness of Homoeopathic medicines belonging to mineral kingdom against other Homoeopathic medicines is assessed by changes made in the symptoms and values of SNOT-22 scoring (score sheet attached in annexures).

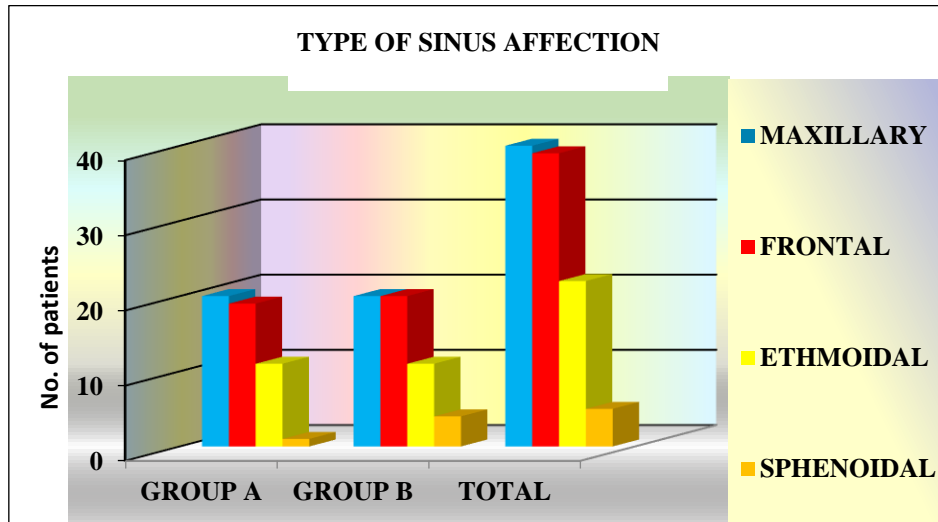
Final analysis of the study was made by using appropriate statistical methods and the confirmation is made using the test of significance.

### 3. Results

#### Type of sinus affection

Out of 40 cases studied, all 40 patients (100%) had maxillary sinus affection, 39 patients (97.5%) had frontal sinus affection, 22 patients (55%) had ethmoidal sinus affection and 5 patients (12.5%) had sphenoid sinus affection.

Figure1: “Graphical representation of patients according to the type if sinus affection”



#### Distribution of Patients according to Past Illness

Table 1: Distribution of patients according to past illness

PAST ILLNESS	GROUP A		GROUP B		TOTAL	
	No. of patients	%	No. of patients	%	No. of patients	%
ALLERGIC RHINITIS	3	15	5	25	8	20
BRONCHIAL ASTHMA	6	30	2	10	8	20
SKIN COMPLAINTS	8	40	5	25	13	32.5
TONSILLITIS	2	10	5	25	7	17.5
CHICKEN POX	4	20	4	20	8	20
HEPATITIS A	4	20	2	10	6	15



Out of 40 cases studied, 8 patients (20%) had Allergic Rhinitis, 13 patients (32.5%) had Skin complaints, 8 patients (20%) had Bronchial asthma, 7 patients (17.5%) had Tonsillitis, 6 patients (15%) had Hepatitis -A and 8 patients (20%) had Chickenpox.

**Distribution of Patients according to Aetiological Factors**

Table 2: Distribution of patients according to Aetiological factors

AETIOLOGICAL FACTORS	GROUP A		GROUP B		TOTAL	
	No. of patients	%	No. of patients	%	No. of patients	
COLD AIR	5	25	6	30	11	
COLD BATHING	1	5	5	25	6	
DUST	1	5	1	5	2	
COLD FOOD & DRINKS	3	15	0	0	3	
DENTAL CARIES	1	5	0	0	1	
SMOKING	0	0	2	10	2	
PASSIVE SMOKING	1	5	0	0	1	
TOBACCO CHEWING	1	5	0	0	1	
GRIEF	2	10	0	0	2	

Out of 40 cases studied, 11 persons showed exposure to cold air, 6 persons to cold bathing, 2 persons to dust, 3 persons to cold food & drinks, 1 person to dental caries, 2 persons to smoking, 1 person to passive smoking, 1 person to tobacco chewing and 2 persons to grief.

**Distribution of Patients according to Symptoms**

Table 3: Distribution of patients according to symptoms

SYMPTOMS	GROUP A		GROUP B		TOTAL	
	No. of patients	%	No. of patients	%	No. of patients	%
FACIAL PAIN	17	85	18	90	35	87.5

NASAL OBSTRUCTION	15	75	15	75	30	75
POST NASAL DISCHARGE	15	75	14	70	29	72.5
THICK NASAL DISCHARGE	11	55	8	40	19	47.5
SNEEZING	11	55	7	35	18	45

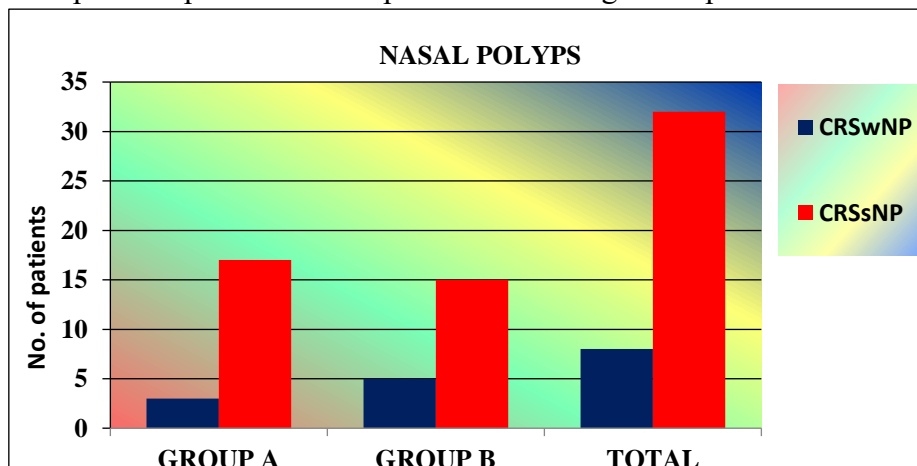
Out of 40 cases studied, 35 patients (87.5%) had facial pain, 30 patients (75%) had nasal obstruction, 29 patients (72.5%) had post-nasal discharge, 19 patients (47.5%) had thick nasal discharge and 18 patients (45%) had sneezing.

**Distribution of Patients according the presence of Nasal Polyps – CRSwNP and CRSSNP**

Table 4: Distribution of patients according to the presence of Nasal Polyps - CRSwNP and CRSSNP

CRS WITH AND WITHOUT NASAL POLYPS	GROUP A	GROUP B	TOTAL
	No. of patients	No. of patients	No. of patients
CRSwNP	3	5	8
CRSSNP	17	15	32

Figure 2: “Graphical representation of patients according to the presence of Nasal Polyps.”





Out of 40 cases studied, 8 patients had CRSwNP and 32 patients had CRSsNP.

**Distribution of Patients according to the Homoeopathic Medicines used from Mineral Kingdom and other Homoeopathic Medicines**

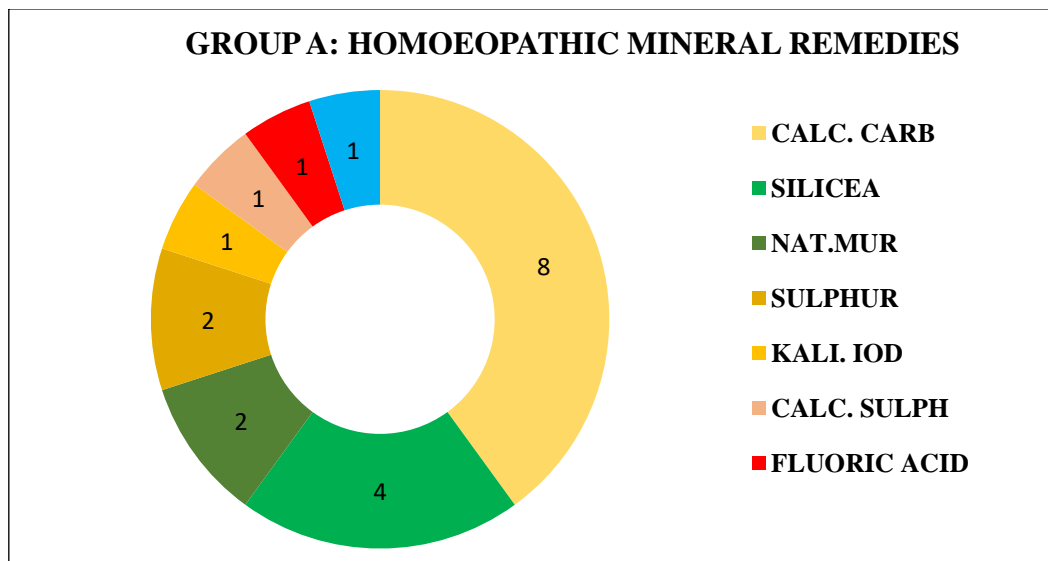
Table 5: Distribution of patients according to the Homoeopathic medicines used from mineral kingdom and other homoeopathic medicines

GROUP A			GROUP B		
MINERAL REMEDIES (Homoeopathic)	No. of patients	%	OTHER REMEDIES (Homoeopathic)	No. of patients	%
CALC. CARB	8	40	PULSATILLA	6	30
SILICEA	4	20	NUX VOMICA	4	20
NAT.MUR	2	10	CARCINOCINUM	3	15
SULPHUR	2	10	THUJA	3	15
KALI IOD	1	5	LYCOPodium	2	10
CALC. SULPH	1	5	LACHESIS	1	5
FLOURIC ACID	1	5	SEPIA	1	5
PHOSPHORIC ACID	1	5	-	-	-

**Group A: Homoeopathic Mineral Remedies**

Out of the 20 cases studied, Calcarea carbonica was indicated in 8 patients (40%), Silicea in 4 patients (20%), Natrium Muriaticum in 2 patients (10%), Sulphur in 2 patients (10%), Kali iodatum in 1 person (5%), Calcarea Sulphurica in 1 person (5%), Fluoricum Acidum in 1 person (5%) and Phosphoricum Acidum in 1 person (5%).

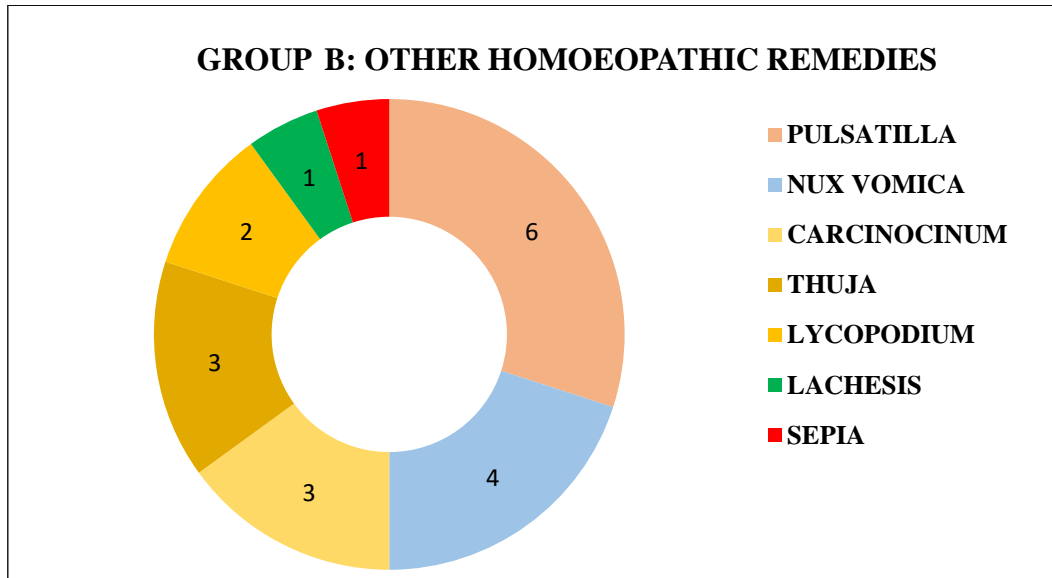
Figure 3: “Picture representation of patients according to Homoeopathic mineral remedies used in the treatment.”



**Group B: Other Homoeopathic Remedies**

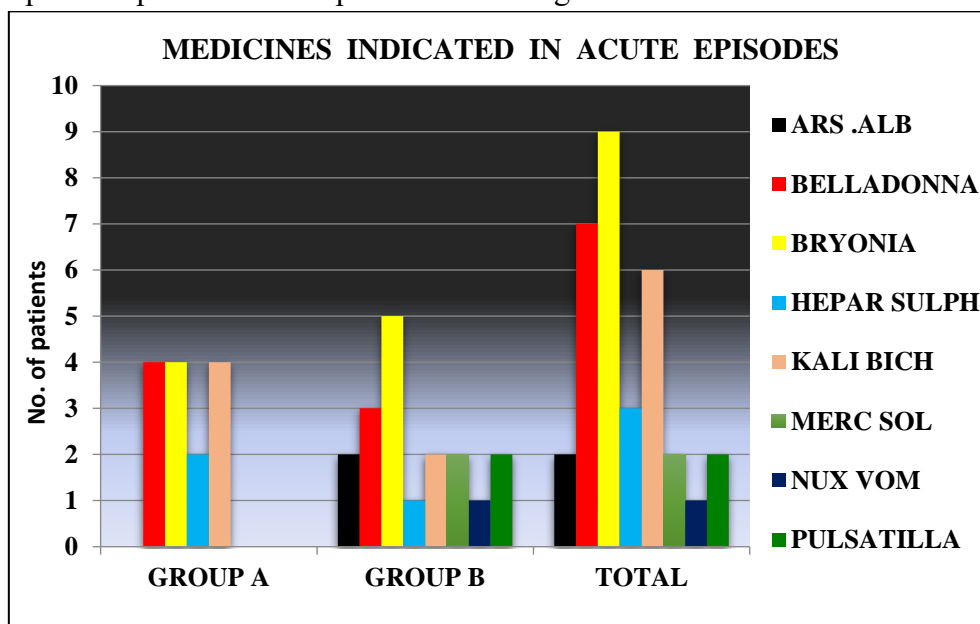
Out of 20 cases studied, Pulsatilla was indicated in 6 persons (30%), Nux vomica in 4 persons (20%), Carcininum in 3 persons (15%), Thuja occidentalis in 3 persons (15%), Lycopodium in 2 persons (10%), Lachesis in 1 person (5%) and Sepia in 1 person (5%).

Figure 4: “Picture representation of patients according to other Homoeopathic medicines used in the treatment.”



**Distribution of Patients according to Homoeopathic Medicines used during Acute Episodes**

Figure 5: “Graphical representation of patients according to the medicines indicated in acute episodes.”



Out of 40 cases studied, Ars.alb was indicated in 2 patients (5%), Belladonna in 7 patients (17.5%), Bryonia in 9 patients (22.5%), Hepar sulph in 3 patients (7.5%), Kali. Bich in 6 patients (15%), Merc. Sol in 2 patients (5%), Nux vomica in 1 patient (2.5%) and Pulsatilla in 2 patients (5%).

**Analysis of SNOT -22 Scores – Before treatment and After treatment**

Figure 6: “Graphical representation of SNOT-22 scores before and after treatment.” (Group – A).

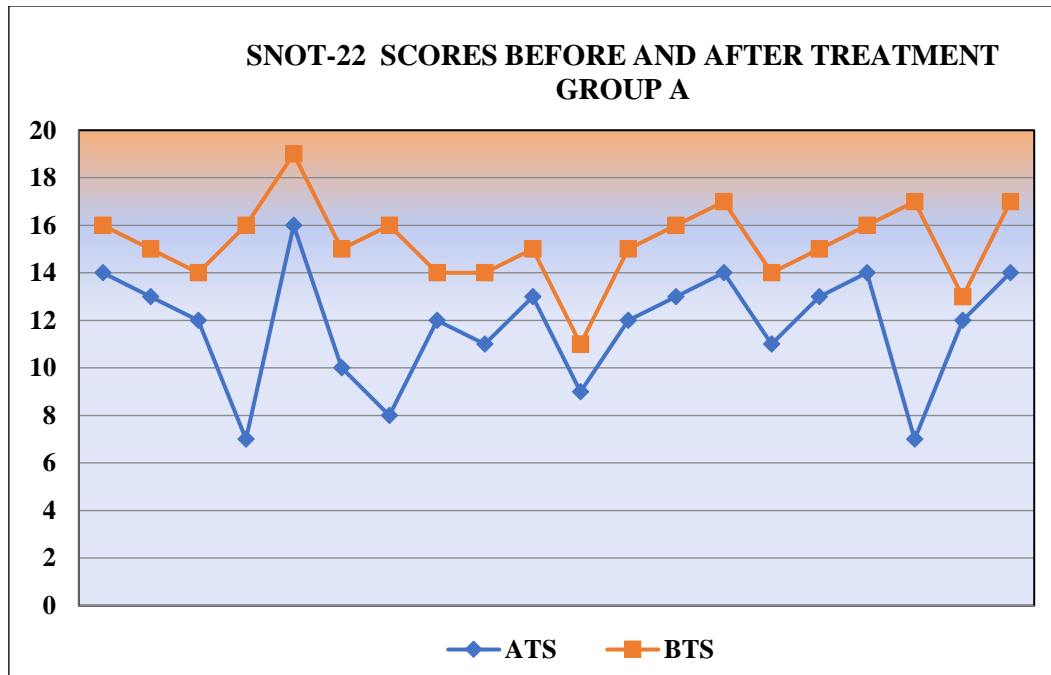
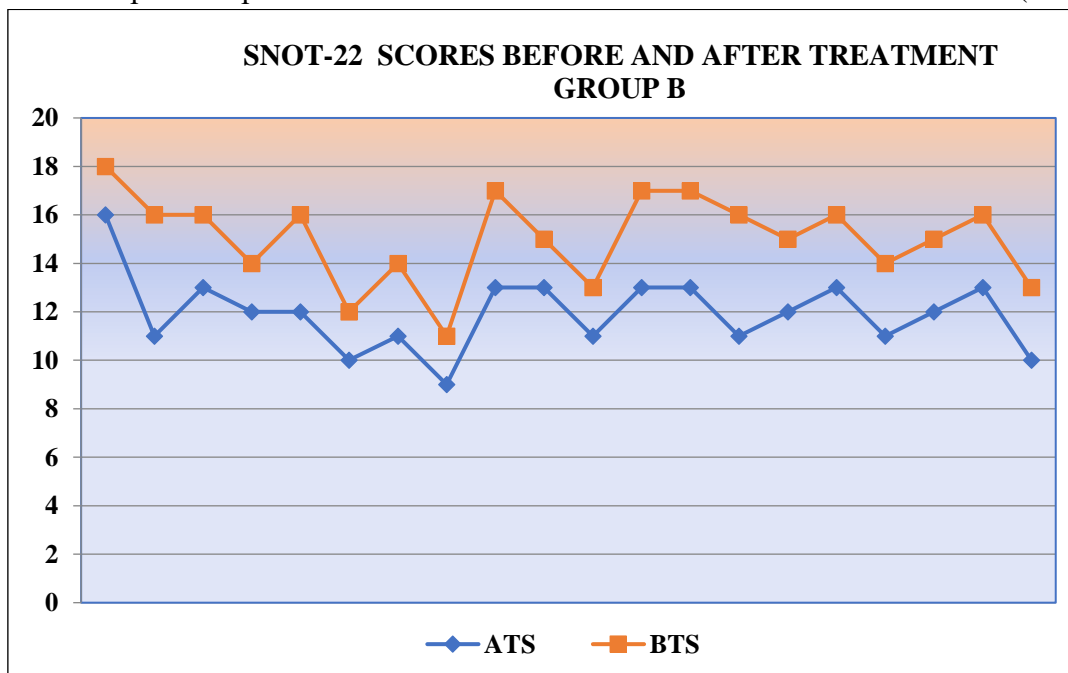


Figure 7: “Graphical representation of SNOT-22 scores before and after treatment.”(Group – B).



In this study, the SNOT-22 scores of all cases individually were analyzed and it was found that there is much change in before and after scores, in almost all cases, of Group B, i.e., other Homoeopathic remedies, compared to Group A. Appropriate statistical tests of significance were used for statistical

analysis of the data obtained. It was found that, 4 cases from Group A showed marked decrease in SNOT-22 scores and 5 cases from Group B showed the same. Here comes the importance of statistical analysis. Though individual scores are higher, it is not always required that the same is reflected on the net result. Statistical analysis helps to find the truth by testing the hypothesis. In this study, though the individual SNOT-22 scores favor other Homoeopathic remedies, the net result is in favor of Homoeopathic mineral remedies with 'P' value more than the table value.

## Discussion

Rhinosinusitis is the fifth common disease in the world with 30 million diagnoses annually. To bring forth, the usefulness of Homoeopathic medicines from mineral kingdom and other Homoeopathic medicines in the management of chronic recurrent sinusitis, remained as the mainstay of the study. SNOT-22 scores before and after treatment, assessed this objective of the study. A careful study of the sphere of actions given in the Boger's synoptic key [10] shows that, the majority of the mineral group of remedies exhibit a profound action on the bones, mucus membranes, periosteal tissues, respiratory organs and nasal cavities. Most of the Homoeopathic mineral remedies are deep acting remedies. Hence, its usefulness in chronic as well as recurrent conditions is laudable. This study significantly proved the usefulness of the Homoeopathic mineral remedies in the management of chronic recurrent sinusitis. Comparing the usefulness of Homoeopathic mineral remedies and other Homoeopathic remedies, statistical analysis shows that the test is significant at both 5% level and 1% level.

In Group A (Homoeopathic mineral remedies), out of the 20 cases studied, Calcarea carbonica was indicated in 8 patients (40%) and Silicea in 4 patients (20%). Natrium Muriaticum was indicated in 2 patients (10%), Sulphur in 2 patients (10%), Kali Iodatum in 1 person (5%), Calcarea Sulphurica in 1 person (5%), Fluoricum acidum in 1 person (5%) and Phosphoricum Acidum in 1 person (5%). On analyzing the cases in Group A, low-grade remedies for inflammation of sinuses in Synthesis repertory like Fluoricum Acidum, Phosphoricum Acidum and Calcarea Sulphurica also, proved useful in chronic sinusitis. Of the three, Fluoricum Acidum case showed better improvement in the SNOT-22 after treatment scores. However, in this study, these remedies of low grade in repertories, showed their indication only in one case each. Hence, further studies with large sample size are required, with remedies in low grade in Synthesis repertory, to prove their usefulness in chronic recurrent sinusitis.

In Group B, out of 20 cases studied, Pulsatilla was indicated in 6 persons (30%), Nux Vomica in 4 persons (20%), Carcinosinum in 3 persons (15%), Thuja Occidentalis in 3 persons (15%), Lycopodium in 2 persons (10%), Lachesis in 1 person (5%) and sepia in 1 person (5%).

On analyzing, the cases included in Group B, out of 20 cases 4 cases required remedies belonging to plant kingdom, 1 remedy from Pisces family, 1 remedy from Ophidian and lastly 1 from Nosodes. However, there was relief from the above-mentioned remedies; these required frequent repetitions due to the return of the complaint unlike Homoeopathic mineral remedies. A few Homoeopathic mineral remedies found its usefulness in cases included in Group B and vice versa especially during the acute episodes.

Out of the 40 cases, 9 cases (22.5%) showed marked change in before and after SNOT-22 scores indicating marked relief in signs and symptoms, 30 cases (75%) showed moderate change in before and after SNOT-22 scores indicating moderate improvement and 1 case (2.5%) showed only a very slight change in before and after SNOT-22 indicating less improvement.

In this study, as we analyze the SNOT-22 scores of all cases individually, we find that there is much change in before and after scores, in almost all cases, of Group B, i.e., other Homoeopathic remedies, compared to Group A. In this study, 4 cases from Group A showed marked decrease in SNOT-22 scores and 5 cases from Group B showed the same. Here comes the importance of statistical analysis. Though individual scores are higher, it is not always required that the same is reflected on the net result. Statistical analysis helps to find the truth by testing the hypothesis. In this study, though the individual SNOT-22 scores favor other Homoeopathic remedies, the net result is in favor of Homoeopathic mineral remedies with 'P' value more than the table value.

## Conclusion

This comparative clinical study, conducted at Government Homoeopathic Medical College, Kozhikode, on the usefulness of Homoeopathic mineral remedies and other Homoeopathic remedies, has showed significant results. Here the sample size taken was 40 cases. It included cases from the age group 15-60 years of both sexes. Assessment of cases included changes in SNOT-22 scores before and after treatment. Statistical analysis included Paired-t test and Student-t test. On analysis, SNOT-22 scores before and after treatment showed significant changes. Apart from these findings, the statistical analysis also showed that the 't' value obtained was higher than the table value thus rejecting the null hypothesis and showing that the Homoeopathic mineral remedies were useful in the management of chronic recurrent sinusitis compared to other Homoeopathic remedies. The test is significant both at 5 percent and 1 percent levels.

This study also brings out the usefulness of a few less important Homoeopathic mineral remedies like Phosphoricum acidum, Calcarea sulphurica and Fluoricum acidum, as marked in Synthesis repertory, in the management of chronic rhinosinusitis. Apart from common plant remedies, like Belladonna and Pulsatilla, used in acute episodes, certain mineral remedies, however, finds their place during acute episodes. This again stands in favor of usefulness of Homoeopathic mineral remedies, though not in chronic phase.

## Appendix

ARS	-	Acute rhinosinusitis
AFRS	-	Allergic fungal rhinosinusitis
CRS	-	Chronic rhinosinusitis
CRSsNP	-	Chronic rhinosinusitis without nasal polyp
CRSwNP	-	Chronic rhinosinusitis with nasal polyp
FESS	-	Functional endoscopic sinus surgery

## Acknowledgement

Let me take this opportunity to thank the supreme power of this Universe, the Almighty, to shower his blessings on me and to stand beside me by imparting in me the positive vibe and energy that leads me to work endlessly even during my hardships.

I render my heartfelt gratitude to my teacher and guide Dr. P. Vishnu, Professor & H.O.D. of Department of Materia Medica, Govt. Homoeopathic Medical College, Kozhikode, for his valuable guidance.

My sincere thanks to Dr.K.L.Babu Superintendent and Principal in charge, Govt. Homoeopathic Medical College, Kozhikode, for making this study and dissertation a real success.

I also extend my sincere gratitude to Dr. Beena Das, Dr. Thara and Dr. Arun Prasad for enlightening me with their knowledge that has helped me a lot in my study process.

I am greatly indebted to my parents Shri. G. Ramesh Nayak and Smt. Manorama R. Nayak for the great support and encouragement given to me at every stage of my education, and to stay as a strong backbone for what I am today. I would also thank Dr. Suchitra R. Nayak, my sister, for helping me gather information, in the preparation of this dissertation.

Lastly, my heartfelt humble thanks to all my patients and non-teaching faculty of this institution, without whose support, this study would not have been possible.

## References

1. Gail G. Shapiro, MD, and Gary S. Rachelefsky, MD. Introduction and definition of sinusitis. *The Journal Of Allergy And Clinical Immunology* 1992; 90(3, section 2):
2. Richard M. Rosenfeld, MD, MPH, Jay F. Piccirillo, MD, Sujana S. Chandrasekhar, MD, Itzhak Brook, MD, MSc, Kaparaboyana Ashok Kumar, MD, FRCS, Maggie Kramper, RN, FNP, Richard R. Orlandi, MD, et al. Clinical Practice Guideline (Update): Adult Sinusitis. *Otolaryngology–Head and Neck Surgery* 2015; Vol. 152((2S)): S1– S39.
3. Daniel L. Hamilos, MD. Chronic rhinosinusitis: Epidemiology and medical management. *Journal Of Allergy And Clinical Immunology* 2011; 128(4):
4. J.B. Shi, Q. L. Fu, H. Zhang, L. Cheng, Y. J. Wang, D. D. Zhu et al. Epidemiology of chronic rhinosinusitis: results from a cross-sectional survey in seven Chinese cities. *Allergy - European Journal of Allergy and Clinical Immunology* 2015; 70(5):
5. Regina Chinwe Onwuchekwa , Nengi Alazigha. Computed tomography anatomy of the Para nasal sinuses and anatomical variants of clinical relevants in Nigerian adults. *Ejantas* 2017; 18(1):
6. Kim W Ah-See, Andrew S Evans. Sinusitis and its management 2007; 334(7589):
7. Alexandra Mavrodi, George Paraskevas. Evolution of the Para-nasal Sinuses' Anatomy through the ages. *Anatomy & Cell Biology* 2013; 46(4).
8. Wytse J. Fokkens, chair a, Valerie J. Lund, co-chair b, Joachim Mullol, co-chair et al. EPOS 2012: European position paper on rhino sinusitis and nasal polyps 2012. A summary for Otorhinolaryngologists...*Rhinology* 2012; 50(1):
9. Sonal Saigal, Shruti Sial, Ankur Bhargava. Rhinosinusitis, a common cause of dental pain. *SRM Journal of Research in Dental Sciences* 2012; 3(4):
10. Boger C.M. A synoptic key of the Materia Medica, reprint Ed. New Delhi: B.Jain Publishers; 2002.