

# Exploring the Action of Homoeopathic Constitutional Medicines in Rhinosinusitis in Age Group 18 to 55 years - An Experimental Study

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## ABSTRACT

**Introduction:** Rhinosinusitis is one of the most common chronic diseases with a high prevalence seen in everyday life. It is a condition which is characterized by inflammation of the nasal mucosa and paranasal sinuses. The presenting symptoms include episodes of pain in the face and affections of any sinus i.e., frontal, maxillary, ethmoidal which are frequently seen along with nasal obstruction, nasal discharge, polypoidal changes. Frequent tendencies to rhinosinusitis can best be treated with homoeopathic approach of individualistic treatment that is with constitutional medicines.

**Materials and Method:** An experimental study was conducted with a sample size of 30 fulfilling the inclusion and exclusion criteria. The sample size was chosen by simple sampling method and patients selected fulfilled the diagnostic criteria of rhinosinusitis. With every follow up, symptoms severity was evaluated using a self-designed assessment scale for disease severity. Pre-treatment assessment score and post-treatment assessment score of each follow up was compared to assess the overall improvement in the patient. The alternative hypothesis was accepted using the Wilcoxon signed rank test.

**Results:** Wilcoxon Signed Rank test shows that the significance value is 0.000. Since the significance value < P value 0.05, the difference between two scores is statistically significant. It can be then concluded that difference between pre-treatment score and post-treatment score is significant and hence we reject the null hypothesis and proves the action of constitutional homoeopathic medicines in treating rhinosinusitis.

**Conclusion:** Constitutional homoeopathic medicines are effective in treating cases of rhinosinusitis.

**Keywords:** Constitutional, Homoeopathic, Paranasal sinus, Rhinosinusitis, Constitutional, Wilcoxon signed rank test.

## INTRODUCTION

Rhinosinusitis is defined as an inflammation of the nose and paranasal sinuses characterized by presence of two or more symptoms, one of which should be nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip)

- with or without facial pain or pressure

- with or without reduction or loss of smell and either
- endoscopic signs of nasal polyp and
- mucopurulent discharge from middle meatus<sup>1</sup>

The term 'rhinosinusitis' is preferred over 'sinusitis' because inflammation of the sinus cavities is almost always accompanied by

inflammation of the adjacent nasal mucosa.<sup>2,3,4,5</sup>

The predisposing factors are:

- nasal infections like common cold and influenza<sup>6</sup>
- nasal obstruction like deviated nasal septum, turbinates, polyps<sup>6</sup>
- nasal allergies<sup>6,8</sup>
- habits like forcibly blowing the nose can push the infection from the nose into the sinuses<sup>6</sup>
- diving and swimming in contaminated water<sup>6</sup>
- dental infections like infection of the upper molars and premolars may lead to maxillary sinusitis<sup>6</sup>
- fungal infections<sup>6,8</sup>
- trauma to the sinus<sup>6</sup>
- neighboring infections like tonsillitis and adenoids may predispose sinusitis.<sup>6</sup>

### Epidemiology

1% to 5% of adults are diagnosed with acute rhinosinusitis in Europe each year. There is an estimation that causes 6 million restricted working days per year in British population.<sup>7</sup>

A study conducted in an ENT Out-patient department in Northern India showed the regional prevalence of different types of sinusitis at a tertiary care center. The gender distribution was seen to be 46% for male and 54 % for female and the age distribution was in age group 21- 30 (20.3%), 31-40 (19.7 %), 41-50 (14.2%), 51-60 (10.8%)<sup>9</sup>

Studies have also found some common diseases which is associated with rhinosinusitis. Allergic rhinitis is present in 25-31% of patients with acute rhinosinusitis and 40-84% with chronic rhinosinusitis which suggested that there can be a correlation between the two. Chronic rhinosinusitis was also observed in 45% of patients in severe asthma<sup>10</sup>. 1 in 8 Indians is hit by chronic sinusitis which is about 5-15% of the urban population. The estimated prevalence is 146/1000 population.<sup>11</sup>

Chronic rhinosinusitis is one of the most common chronic diseases and is associated with a high socioeconomic burden. Its

estimated prevalence ranges widely, from 2 to 16%. It is more common in female subjects, aged 18-64 years, and in southern and midwestern regions of the United States.<sup>12</sup>

Due to increased level of air pollution in urban areas it has led to grave effects on the health of inhabitants of metropolitan cities. The National Institute of Allergy and Infectious disease said this disease is more widespread than diabetes, asthma or coronary heart disease.<sup>13</sup>

A research conducted in 60 patients at a hospital in Telangana showed that 75% of the patients had incidence of chronic rhinosinusitis in the age group of 16-45 years. The most common etiology was rhinosinusitis by infections (26-44%) and anatomical obstruction (22-36%). The most common sign and symptom was headache and polypoidal changes observed in 36 patients each (60%) followed by nasal obstruction in 35 patients (50%).<sup>14</sup>

### Justification

Among respiratory infections, rhinosinusitis is one of the most common illnesses that affects a high proportion of the population<sup>3</sup>. Symptoms presenting as pain in the face affecting any sinus i.e., frontal, maxillary, ethmoidal are frequently reported. Other symptoms reported by patients secondary to rhinosinusitis are nasal obstruction, decrease smell and purulent nasal discharge.<sup>15</sup> With the increasing incidence and prevalence of rhinosinusitis people tend to search for quick relief. Air pollution is also a known contributing factor in the cause of sinusitis. A majority of Indians suffer from chronic sinusitis. It has led to decrease productivity in working days<sup>9</sup>.

Conventional medicines treat rhinosinusitis with the help of antibiotics, steroids, antihistamines for its relief<sup>15</sup>. The overuse of nasal decongestants can also lead to a condition called rebound congestion<sup>16,5</sup> in which the person has prolonged stuffiness and nose blockage. Long term use of these spray can cause damage to the tissue

causing infection and pain and cause the person to be dependent on the nasal spray.

Rhinosinusitis is a condition which do not only need treatment for acute infection or inflammation but also the inherent tendency to have rhinosinusitis recurrently. Frequent upper respiratory infections along with rhinosinusitis can be treated effectively with homoeopathic approach of individualistic treatment.

In aphorism 2 of organon of medicine, Dr Hahnemann stated about ‘the highest ideal of cure’<sup>17</sup> which according to him is not just removal of the pathological condition but removal of all the existing symptoms of the patients in a rapid, gentle and permanent manner. Homoeopathy mode of treatment is also harmless and the most reliable because of the well proven remedies which were proved and reproved on healthy humans.

Dr Hahnemann has also stated “the Law of similia” as the basis of the homeopathic system. It is also called the Law of cure<sup>17</sup>. The Law of similar states that every homoeopathic remedy has certain properties of producing a set of symptoms on healthy human beings and when these symptoms match with the natural disease it acts as a therapeutic agent and help the body in correcting the disorder. Homoeopathy works both ways, effective in relieving the symptoms and increases one’s resistance to cold. It also strengthens the vital force which in turn helps the body to fight back the infection.

In this study I would like to study the effectiveness of homoeopathic constitutional remedies in treating cases of rhinosinusitis and improve the quality of life in such patients.

## LITERATURE REVIEW

### Anatomy and physiology

Development of the nose begins from the frontonasal process. It grows between the primitive forebrain and stomodeum. Its further divided into a median nasal process and two lateral processes. The primitive nasal cavities are closed at their posterior ends by the buconasal membrane which

ruptures to form the posterior nares. There are olfactory placodes on the frontonasal process which forms the olfactory pits, which forms the nasal cavity. The primitive nasal septum divides the nasal cavity in the middle and definitive septum forms.

Paranasal sinuses develop as the outpouching of the nasal mucosa. The maxillary sinuses are present at birth, but reach the full development after the eruption of the second molar tooth. Ethmoidal sinuses are also present rudimentary at birth.<sup>6</sup>

The nose has a rich blood supply which comes from the branches of the external and internal carotid arteries.<sup>6</sup>

The nose has a rich nerve supply:

1. Autonomic nerve supply by – sympathetic and parasympathetic nerve
2. Sensory- through the fifth cranial nerve<sup>6</sup>
3. Olfactory nerve penetrates the cribriform plate and is distributed along the superior aspect of the nasal septum<sup>5</sup>.

The paranasal sinuses are paired bony cavities in the forehead, cheek, nose and central skull i.e., the frontal, maxillary, ethmoid and sphenoid sinuses.<sup>5</sup>

### Functions of nose and paranasal sinus

- Respiration: the nose performs a very important task of breathing which continues independently even during mastication<sup>6</sup>.
- Protection: it helps to clean, warm and humidify the air before its entry in lower respiratory tract<sup>5</sup>.
- Drainage: The paranasal sinuses and nasolacrimal duct drains in the nasal cavity.<sup>6</sup> The mucus in these sinuses circulates toward the natural ostia of each sinus and with the help of mucociliary flow and drains into the nose.<sup>5</sup>
- The nose also performs the function of olfaction and tasting.<sup>5</sup> Olfaction also has a protective value against approaching dangers.<sup>6</sup>
- Reflexes: like sneezing have a protective function. Olfaction can also act as a

reflex and stimulates the salivary and gastric gland.<sup>6</sup>

**Other functions of the paranasal sinuses are:**

- To protect the orbit
- To reduce the weight of the skull bone
- To give resonance to voice
- For respiratory function and air conditioning
- To help in growth of face due to formation of sinuses<sup>6</sup>

As the lining of the nose and paranasal sinuses is continuous, inflammation tends to involve both areas to a greater or lesser extent. Rather than distinguishing rhinitis and sinusitis separately rhinosinusitis has become a suitable descriptive term.<sup>3,8</sup>

**Aetiology**

1. Age - It usually occurs after the age of 15 years but it may affect even children aged 5 years<sup>6</sup>
2. Sex - It affects both sexes equally<sup>6</sup>
3. Predisposing factors-
  - nasal infections like common cold and influenza<sup>6</sup>. The infection spreads to the sinuses due to sneezing and nose blowing. The discharge from sinus can infect another in the same way.<sup>18</sup>
  - nasal obstructions like deviated nasal septum, turbinates, polyps are common seen<sup>6</sup>
  - nasal allergies<sup>6,8</sup>. Rhinitis is one of the most common cause for sinusitis.<sup>18</sup>
  - Habits like forcibly blowing the nose pushes the infection from the nose into the sinuses<sup>6</sup>
  - Diving and swimming in contaminated water<sup>6</sup> may cause direct spread through the ostium.<sup>18</sup>
  - Dental infections like infection of the upper molars and premolars may lead to maxillary sinusitis<sup>6</sup> due to entry of infection from a dental root.<sup>18</sup>
  - Fungal infections<sup>6,8</sup>
  - Trauma to the sinus<sup>6</sup>
  - Poor general health<sup>19</sup>

- Neighbouring infections like tonsillitis and adenoids may also predispose sinusitis.<sup>6</sup>
- fractures involving the sinuses may be followed by sinusitis either through direct spread of infection through a fractured bone.<sup>18</sup>
- Others like idiopathic, occupational, irritants.<sup>8</sup>

**Clinical features**

- constitutional symptoms consisting of fever, malaise and body ache usually present in acute cases.<sup>19</sup>
- initially discomfort in the nasopharyngeal region may be present<sup>6</sup>
- nasal obstruction or congestion<sup>6</sup>
- hyposmia (reduced sense of smell)<sup>19</sup>
- facial pressure, pain, tenderness, rhinorrhea (anterior or postnasal)
- tooth ache (upper teeth)<sup>19</sup>
- nasal discharge is mucoid initially soon becomes purulent<sup>6</sup>
- blocking of the nose on the affected side due to congestion and oedema of the nasal mucosa<sup>6</sup>

**Pathophysiology of rhinosinusitis**

The sinuses are sterile under normal conditions. Secretions in the sinus flow by ciliary action through the ostia and drain into nasal cavity. In the healthy individual, the flow of the sinus secretions is always in a unidirectional way. This prevents any back contamination of the sinuses. In most individuals, the maxillary sinus has a single ostium which serves as the only outflow tract for drainage. The oedema of the mucosa at these openings becomes congested that causes obstruction of the outflow tract and stasis of secretions leading to infection by bacteria. The retained mucus when infected leads to sinusitis.<sup>4</sup>

**Differential diagnosis**

- Common cold - the most common acute infection. It is usually caused by a virus and spreads occurs by direct contact or airborne droplets. The virus may be rhinovirus, influenza virus.<sup>6</sup>

- Allergic rhinitis - a disorder characterized by sneezing and coryza due to reaction to an allergen. Symptoms includes nasal irritation, continuous sneezing, rhinorrhea, nasal obstruction, anosmia. Blood report may show eosinophilia.<sup>6</sup>
- Migraine - may produce headache in the frontal region but the nasal cavity is normal. It is accompanied by nausea and vomiting and sensitivity to light and sound<sup>6</sup>. Aura may be present. Visual disturbances like blurring of vision and photophobia. Brainstem features like vertigo, ataxia, diplopia.<sup>20</sup>
- Tension type headache - an episodic form of headache which progresses to a chronic form where headaches occur almost daily. Occurs mostly in patients subjected to stress, anxiety and depression<sup>20</sup>
- Cluster headache – painful headache mostly affecting men. There is clustering headache with periodicity. The pain peaks in 10-15 minutes. And lasts for 45- 60 minutes and may occur 1-3 times per day<sup>20</sup>
- Trigeminal neuralgia - severe pain in the infra-orbital region, but other nasal symptoms are absent. It causes mild to severe facial pain triggered by chewing or speaking<sup>11</sup>. Typically starts in the 6<sup>th</sup> and 7<sup>th</sup> decades. Hypertension is the main risk. Paroxysms of knife like or electric shock like pain lasting seconds.<sup>21</sup>
- Look for the color of the mucosa. It can become reddened because of infection<sup>23</sup>
- Nasal congestion/blockage whether it is unilateral or bilateral<sup>22</sup>
- Any discharges: watery discharge, purulent discharge, bloody discharge<sup>22</sup>. It will be clear with allergic reactions and yellowish with infections.<sup>23</sup>
- Look for hypertrophic turbinates. The middle and inferior turbinates are shelf like projections along the lateral wall.<sup>23</sup>
- check for polypoid growths which are soft and pale looking
- Tenderness on palpation overlying the sinuses mostly frontal and maxillary is elicited by using the thumbs and applying pressure.

#### **Sites for testing the tenderness of paranasal sinus are:**

1. Maxillary sinus: tenderness is elicited on the canine fossa on the cheek<sup>6</sup>
2. Frontal sinus: tenderness is tested by pressing the floor of the frontal sinus in the medial portion, just above the inner canthus of the eye<sup>6</sup>
3. Anterior ethmoidal sinus: tenderness is tested on the sides of the nose midway between the inner canthus of the eye and the nasion<sup>6</sup>

#### **Oral cavity examination<sup>24</sup>**

- any post nasal drip
- look for any caries

#### **Throat examination**

- check for congestion, enlarged tonsils.
- Ears - look for discharge<sup>24</sup>
- Eyes - conjunctival congestion, lacrimation<sup>24</sup>

#### **Auxillary management of rhinosinusitis<sup>25</sup>**

1. Drinking adequate amount fluids can help in relieving sinus symptoms.
2. Using a humidifier can help in thinning of the mucous production and drain the sinuses. By keeping the mucous moist, it will allow the sinuses to drain more easily.

#### **Examination**

##### **Inspection and palpation:**

- This is done to detect any deformity, asymmetry or swelling of the nose and face.<sup>22</sup>
- Depression or deviation of the nasal bridge due to injury or disease may be detected.<sup>22</sup>
- Have the patient tilt his head back and push the tip of the nose slightly with the thumb of the left hand and inspect the nasal cavity and mucosa.<sup>23</sup>

3. Nasal irrigation: by gently flushing out nasal passages with saline solution. We shouldn't use table salt and instead use sea salt for better results.
4. Steam inhalation: is the easiest method that can be adopted. This method is done by introducing warm moist air into the lungs through the nose and throat. We can also add menthol, camphor and eucalyptus oils. Researches have found that the nasal mucociliary clearance time of patients with rhinosinusitis was shortened after steam inhalation and improvement was seen.<sup>26</sup>
5. Warm and cold compresses: rotating warm and cold compress could also help.
6. Ginger garlic: the active principle alicin present kills bacteria and gives our immune system a boost.
7. Intake of vitamin C rich foods like citrus fruits can be advised.

### Homoeopathic management

According to Dr Farokh J Master, Homoeopathy is a holistic healing art that looks at the symptom picture of a person, including psychological, emotional, physical and hereditary characteristics of the individual.<sup>27</sup>

Rhinosinusitis is a condition which has both acute and chronic presentations. According to Hahnemann's classification of disease rhinosinusitis can be classified as dynamic acute individual disease and dynamic chronic disease with fully developed symptoms miasmatic<sup>28</sup>

In Aphorism 7 of organon of medicine, Dr Hahnemann says in a case where they are exciting and maintaining causes present it can be cured by removing the cause but sometimes when they are not present, we have to depend on the existing symptoms of the patient. These symptoms include the physical and the mental aspect which collectively forms the totality of symptoms. The totality of these symptoms which consists of the signs and symptoms, and the affection of the vital force, must be the principle, or the sole means to guide us to a

remedy<sup>17</sup>. Thus, the totality of symptoms must be the only thing the physician has to take note of in every case of disease and to remove by means of his art, in order that the disease shall be cured and transformed into health.

Since rhinosinusitis is found to be associated with etiological factors like chronic exposure to allergens, dust, presence of structural changes like nasal polyps, deviated nasal septum, treatment by other system of medicine pose as the exciting and maintaining causes which can be treated effectively. The treatment of acute presentation of rhinosinusitis is symptomatically based on the presenting symptoms that they present.

On the other hand, chronic diseases are those diseases that have persisted for a long time<sup>13</sup>. The symptoms are usually less severe but they can show recurrency. They are slow onset slow progress and slow decline. Chronic diseases are caused by chronic miasm which is the fundamental cause of disease.<sup>13</sup> They can be managed with help of well known homeopathic medicines known as constitution which also covers the miasm of the patient.

Miasms are the dynamic, morbidic forces that pollute the human organism leading to unhealthy tendencies<sup>17</sup>. They produce the chronic diseases and predisposes the person to acute diseases. These miasmatic expressions can differ from individual to individual. In treating cases of rhinosinusitis of chronic origin especially in cases of recurrent attacks we need to know the root cause of the disease and understanding the person as a whole and form a constitutional totality which also covers the miasm.

In Aphorism 5 of Organon of medicine, Dr Hahnemann says that in case of chronic disease we need to investigate the physical constitution of the patient, his moral and intellectual character, his occupation, mode of living and habits, his social and domestic relations, his age, sexual function etc<sup>17</sup>. By doing so we come to a constitutional picture of the patient and we are able to get a clear picture of the similimum and correlate with

the medicine. Similarly, even in the case of rhinosinusitis of chronic origin of long duration knowledge of the root cause i.e., the fundamental cause which is generally due to a chronic miasm is important.

In cases of chronic rhinosinusitis in which patient is presenting with chronicity and recurrency of complaints a gentle and harmless method i.e., the constitutional approach would be the most reliable way to treat the patient.

The English word, constitution, comes from the Latin root 'constituere' which means constitutes, to set up, to establish, to form or make up<sup>29</sup>.

According to Dr M.L Dhawale 'The total sum of the individual characteristics in the three planes i.e., emotional, intellectual and physical is known as constitution<sup>30</sup>.

Constitution can be defined as psychological, functional and structural plan of organization revealed through a pattern made by various characteristics and responsiveness to environmental factors.<sup>2</sup>

Homoeopathy has a holistic approach in treatment of the patient as a whole i.e., body, mind, and spirit. Hence, a complete case taking will help us in tracing the constitutional picture of the patient which is nothing but the totality of symptoms and a remedy is selected based on the totality. Miasm is also required while making the chronic totality. Constitution also influences the susceptibility of the patient and strengthens the immunity.

**Researches Conducted:** A research conducted in homoeopathy on rhinosinusitis have tried to ascertain the usefulness of 17 homeopathic medicines in the treatment of rhinosinusitis. 97 patients were enrolled in the study. The study outcome showed 61% marked improvement, 20% moderate improvement, 8% mild improvement in patients treated with rhinosinusitis. Homeopathic medicines frequently indicated were Silicea, Kali bichromium and Calcarea carbonica. Hypertrophied turbinates were seen to be a major factor for the increased prevalence of chronic sinusitis

and maxillary sinusitis was observed to be the commonest presentation.<sup>3</sup>

A prospective randomized, double blind, placebo controlled trial was conducted in 2014 to evaluate the efficacy of individualized homeopathic medicines in 62 patients<sup>31</sup> and the improvements were seen more where homoeopathic intervention was given than placebo group. The most frequently prescribed medicines were Calcarea carb, Lycopodium clavatum, Sulphur and Pulsatilla.<sup>32</sup>

A prospective observational study carried out in 2008 to evolve at the most effective homeopathic medicines, their indications, useful potencies. Different clinical patterns of sinusitis were observed. Tenderness over the sinus was the most common subjective symptom observed. It also showed the affinity of medicines to a particular type of sinus affection. Pulsatilla had affinity for maxillary, frontal and fronto-maxillary sinusitis; Natrum Muriaticum and Kali bich in frontal sinusitis. Females were more prone than males and mostly seen in adult age group<sup>33</sup>.

Homoeopathy has a wide scope in treating chronic rhinosinusitis because the Homoeopathic Materia medica has a wide variety of medicines which has a specific action on the upper respiratory tract and can help in providing relief to the patient. Well selected deep acting homoeopathic remedy act as constitutional medicine.

## **MATERIALS & METHODS**

**Type of study design** - Experimental study.

**Duration of study** -18 months.

**Study population** - Patients coming in OPD, IPD who fulfilled the diagnostic criteria.

### **Inclusion criteria**

1. Adult age group 18-55 years
2. Both sexes
3. Acute and chronic rhinosinusitis

### **Exclusion criteria**

1. Rhinosinusitis presenting with complications like orbital abscess,

mucopyocele, oedema of eyelids, meningitis.

2. Patients with chronic respiratory condition like severe asthma
3. Paranasal sinus and nose surgery
4. Pregnant and lactating females
5. Immunocompromised disease
6. Mentally retarded patients
7. Patients with congenital defect

**Diagnostic criteria for rhinosinusitis<sup>24</sup>**

Major criteria	Minor criteria
Facial pain/Pressure	Headache
Facial congestion/fullness	Fever (all non-acute)
Nasal obstruction/Blockage	Halitosis
Purulent discharge anterior/posterior	Fatigue
Hyposmia /Anosmia	Dental pain
Purulence on examination	Cough
Fever (Acute only)	Otagia /aural fullness

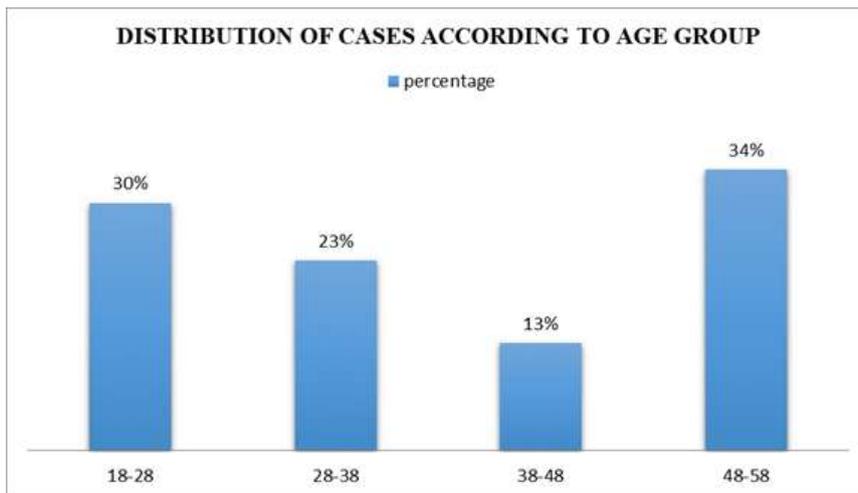
Diagnosis requires - 2 or more major criteria  
1 major and 2 or more minor criteria

**Outcome assessment score for disease**

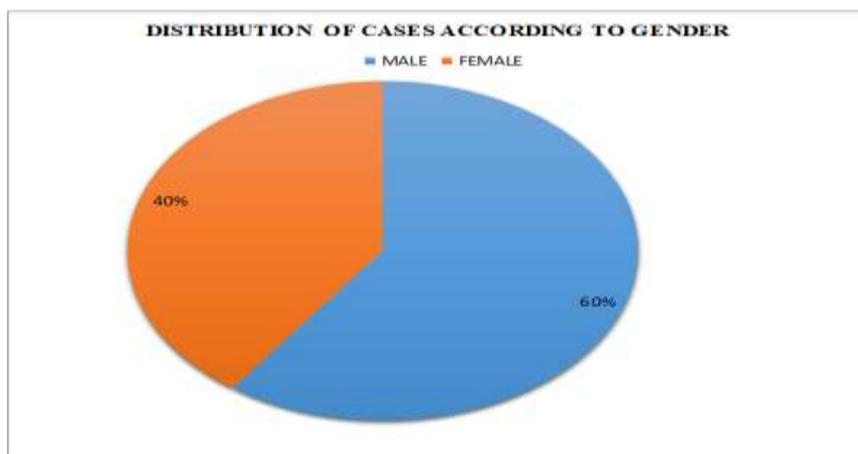
Sl. no	Symptom	No problem 0	Mild problem 1	Moderate problem 2	Severe 3
1	Nasal blockage/ Obstruction				
2	Nasal discharge anterior and posterior				
3	Facial pain/pressure				
4	Facial congestion fullness				
5	Decreased sense of smell				
6	Headache				
7	Fatigue				

Mild 1-7, Moderate 8-14, Severe >14

**RESULT**

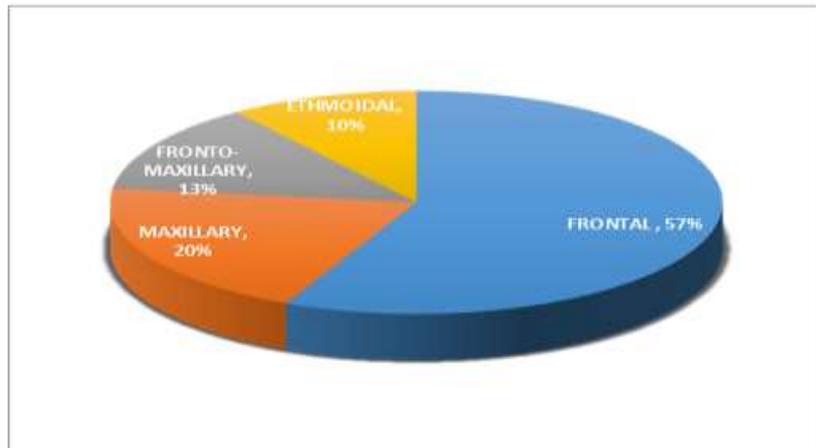


GRAPH:1

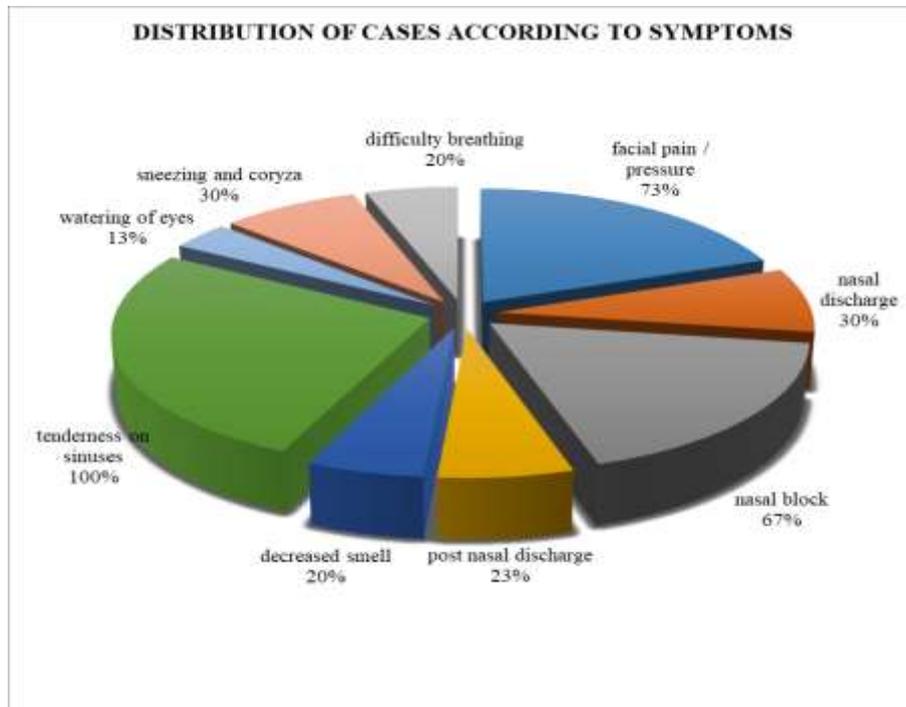


GRAPH:2

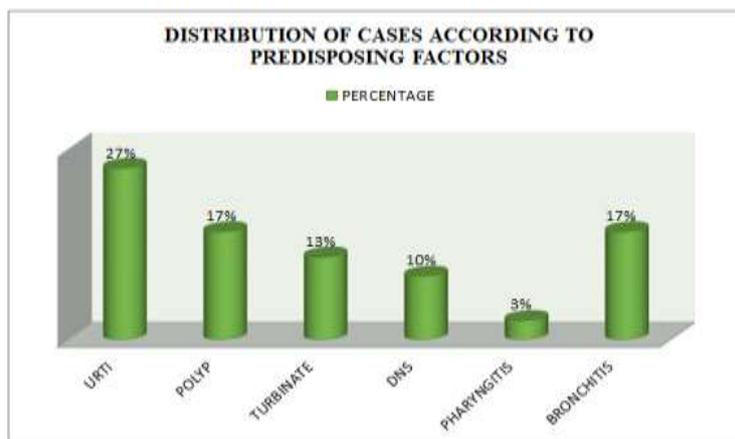
**DISTRIBUTION OF CASES ACCORDING TO SINUSES AFFECTED**



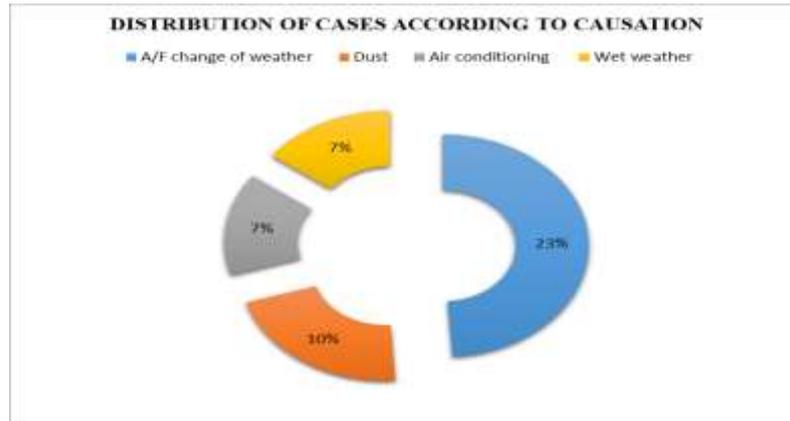
**GRAPH: 3**



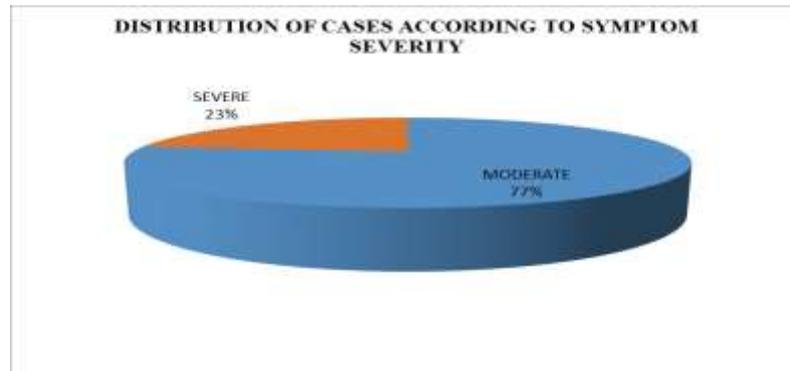
**GRAPH: 4**



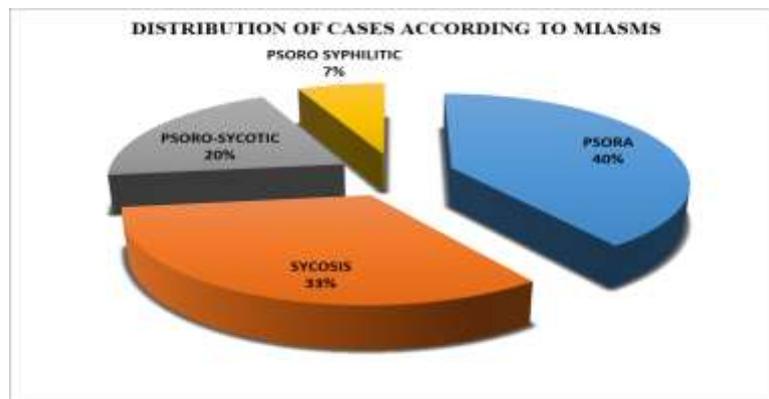
**GRAPH: 5**



GRAPH: 6

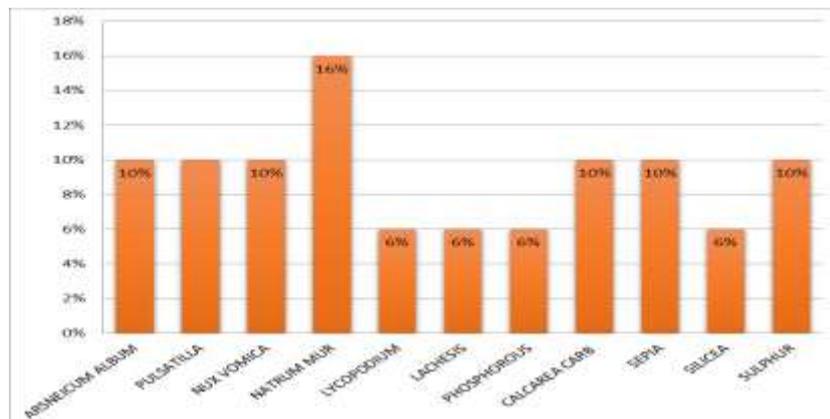


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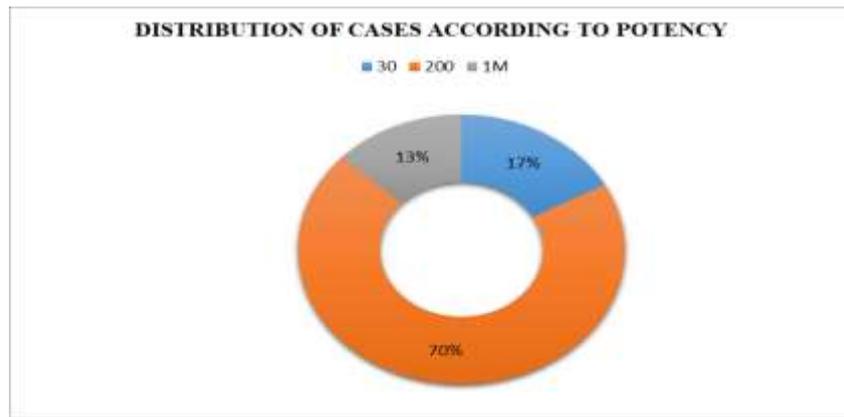


GRAPH: 8

**DISTRIBUTION OF CASES ACCORDING TO CONSTITUTINAL REMEDIES INDICATED**



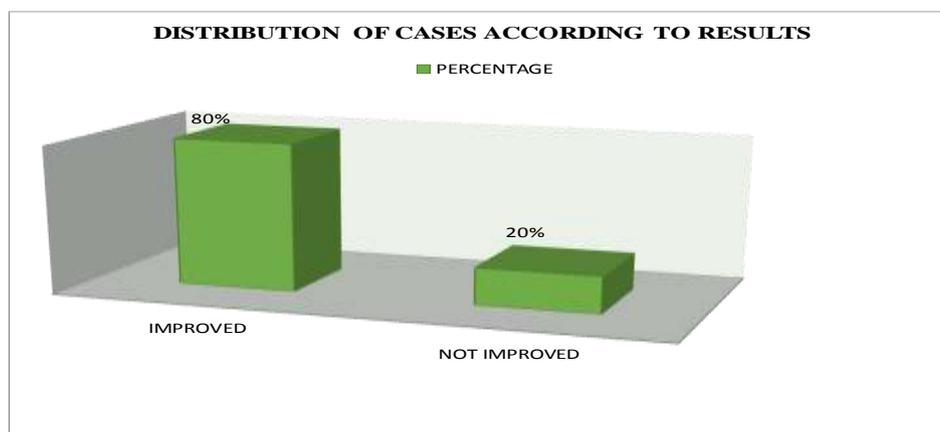
GRAPH: 8



GRAPH:9

TABLE 1: DISTRIBUTION OF CASES ACCORDING TO PRE AND POST TREATMENT SCORES (OUTCOME ASSESSMENT SCORE FOR DISEASE SEVERITY)

CASE NO.	PRE-TREATMENT SCORE	POST TREATMENT SCORE	RESULT
1	15	4	Improved
2	14	5	Improved
3	10	3	Improved
4	15	3	Improved
5	10	2	Improved
6	13	11	Not Improved
7	16	5	Improved
8	13	4	Improved
9	13	12	Not Improved
10	13	3	Improved
11	14	12	Not Improved
12	12	3	Improved
13	17	4	Improved
14	14	5	Improved
15	13	4	Improved
16	13	3	Improved
17	12	3	Improved
18	13	4	Not Improved
19	16	4	Improved
20	14	5	Improved
21	15	4	improved
22	13	4	Improved
23	14	4	Improved
24	14	12	Not Improved
25	13	3	Improved
26	12	11	Not Improved
27	12	4	Improved
28	15	5	Improved
29	13	4	improved
30	13	12	Not Improved



GRAPH:10

### STATISTICAL ANALYSIS:

**Null hypothesis:** Homoeopathic constitutional medicines are not useful in the treatment of rhinosinusitis in age group 18 to 55 years. (There is no significant difference between pre- treatment and post-treatment scores after Homoeopathic intervention.)

**Alternative hypothesis:** Homoeopathic constitutional medicines are useful in the treatment of rhinosinusitis in age group 18 to 55 years. (There is significant difference between pre- treatment and post- treatment scores after Homoeopathic intervention.)

The data was not normally distributed; it was checked through Shapiro-Wilk test hence, non-parametric test Wilcoxon signed rank test was applied.

TABLE 2: MEAN, MEDIAN AND MODE (ASSESSMENT OUTCOME SCORE FOR SEVERITY OF DISEASE)

	PRE-TREATMENT SCORE	POST TREATMENT SCORE
MEAN	13.46	5.4
MEDIAN	13	4
MODE	13	4

### STEPS OF WILCOXON TEST:

STEP 1: State the null and alternate hypothesis

Null hypothesis ( $H_0$ ): Homoeopathic constitutional medicines are not useful in the treatment of rhinosinusitis in age group 18 to 55 years.

Alternate hypothesis ( $H_A$ ): Homoeopathic constitutional medicines are useful in the treatment of rhinosinusitis in age group 18 to 55 years.

STEP 2: Find the difference and absolute difference between each pair.

TABLE 3: ABSOLUTE VALUES FOR ASSESSMENT OUTCOME FOR SEVERITY OF DISEASE

CASE NO.	PRE TREATMENT (X)	POST TREATMENT (Y)	X-Y	ABSOLUTE (X-Y)
1	15	4	11	11
2	14	5	9	9
3	10	3	7	7
4	15	3	12	12
5	10	2	8	8
6	13	11	2	2
7	16	5	11	11
8	13	4	9	9
9	13	12	1	1
10	13	3	10	10
11	14	12	2	2
12	12	3	9	9
13	17	4	13	13
14	14	5	9	9
15	13	4	9	9
16	13	3	10	10
17	12	3	9	9
18	13	4	9	9
19	16	4	12	12
20	14	5	9	9
21	15	4	11	11
22	13	4	9	9
23	14	4	10	10
24	14	12	2	2
25	13	3	10	10
26	12	11	1	1
27	12	4	8	8
28	15	5	10	10
29	13	4	9	9
30	13	12	1	1

STEP 3: Arrange the pairs by the absolute differences from the smallest to largest absolute differences. Assign the rank to

each value and if the mean difference is 0 then assign them the mean value

STEP 4: Find the sum of the positive ranks and the negative ranks.

TABLE 4: SUM OF POSITIVE RANK FOR ASSESSMENT OUTCOME FOR SEVERITY OF DISEASE

CASE NO.	PRE-TREATMENT (X)	POST TREATMENT (Y)	X-Y	ABSOLUTE (X-Y)	RANK	SUM OF POSITIVE RANK	SUM OF NEGATIVE RANK
1	15	4	11	11	26	26	
2	14	5	9	9	14.5	14.5	
3	10	3	7	7	7	7	
4	15	3	12	12	28.5	28.5	
5	10	2	8	8	8.5	8.5	
6	13	11	2	2	5	5	
7	16	5	11	11	26	26	
8	13	4	9	9	14.5	14.5	
9	13	12	1	1	2	2	
10	13	3	10	10	22	22	
11	14	12	2	2	5	5	
12	12	3	9	9	14.5	14.5	
13	17	4	13	13	30	30	
14	14	5	9	9	14.5	14.5	
15	13	4	9	9	14.5	14.5	
16	13	3	10	10	22	22	
17	12	3	9	9	14.5	14.5	
18	13	4	9	9	14.5	14.5	
19	16	4	12	12	28.5	28.5	
20	14	5	9	9	14.5	14.5	
21	15	4	11	11	26	26	
22	13	4	9	9	14.5	14.5	
23	14	4	10	10	22	22	
24	14	12	2	2	5	5	
25	13	3	10	10	22	22	
26	12	11	1	1	2	2	
27	12	4	8	8	8.5	8.5	
28	15	5	10	10	22	22	
29	13	4	9	9	14.5	14.5	
30	13	12	1	1	2	2	
					SUM	465	0

STEP 5: Reject or accept the null hypothesis.

The test statistic, W, is the smaller value of the absolute values of the positive ranks and negative ranks.

In this case:

W-value: 0

Mean Difference: 8.47

Sum of pos. ranks: 465

Sum of neg. ranks: 0

To determine if we should reject or fail to reject the null hypothesis, we can reference the critical value found in the Wilcoxon Signed Rank Test Critical Values Table that corresponds with n and our chosen alpha level.

If our test statistic, W, is less than or equal to the critical value in the table, we can reject the null hypothesis. Otherwise, we fail to reject the null hypothesis.

W-value-The value of W is 0. The critical value for W at N = 30 ( $p < .05$ ) is 137.

The result is significant at  $p < .05$ .

The shortcut to the hypothesis testing of the Wilcoxon signed rank-test is knowing the

critical z-value for a 95% confidence interval (or a 5% level of significance) which is  $z = 1.96$  for a two-tailed test and directionality.

Z-value: -4.7821

Mean (W): 232.5

Standard Deviation (W): 48.62

Sample Size (N): 30

Z-value-The value of z is -4.7821. The p-value is  $< .00001$ .

The result is significant at  $p < .05$ .

Result-Hence, the test is significant so the null hypothesis is rejected and the alternative is accepted.

Wilcoxon Signed Rank test shows that the significance value is 0.000. Since the value is less than p value 0.05, the difference between two scores is statistically significant. It can be then concluded that difference between pre-treatment score and post-treatment score is significant and hence we reject the null hypothesis.

Hence, it proves the action of constitutional homoeopathic medicines in treating rhinosinusitis.

## DISCUSSION

The topic selected for my study is an experimental study of 30 cases which fulfilled the inclusion and exclusion criteria as well as the diagnostic criteria for rhinosinusitis. A detailed review of literature was done from books, journals, and research works. The cases were studied in detail which included analysis and evaluation and a constitutional medicine was prescribed. An assessment outcome score for disease severity was used to assess the pre and post treatment scores.

Statistical analysis: Wilcoxon Signed Rank test was used to assess the efficacy of before and after treatment scores.

The important observations drawn from the study are as follows:

1. Prevalence of rhinosinusitis was seen more among the age group of 48 to 58 years (10 cases – 34%) and also among 18 to 28 years (9 cases – 30%). This showed that rhinosinusitis had prevalence in both younger age group and adults.
2. In this study, gender distribution was found to be more in males with 18 cases (60%) than females with 12 cases (40%). This showed that rhinosinusitis affects males more.
3. In this study out of 30 cases, it was observed 17 cases presented with frontal sinusitis (57%), maxillary sinusitis 6 cases (20%), fronto-maxillary 4 cases (13%) and fronto – ethmoidal 3 cases (10%)
4. In this study the commonly presenting symptoms observed were facial pain and pressure 22 cases (73%), nasal discharge 9 cases (30%), nasal block 20 cases (67%), post nasal discharge 7cases (23%), decreased smell 6 cases (20%), tenderness on sinuses 30 cases (100%), watering of eyes 4 cases (13%), sneezing and coryza 9 cases (30%), difficulty breathing 6 cases (20%). The diseased termed ‘rhinosinusitis’ was also seen clinically which was confirmed by the clinical presentations of the patients

which presented with upper respiratory tract infection along with sinus infection

5. The common predisposing causes seen in patients were upper respiratory tract infections with 8 cases (27 %), nasal polyps 5 cases (17 %), bronchitis 5 cases (17 %), hypertrophied turbinate 4 cases (13%), deviated nasal septum 3 cases (10 %) and pharyngitis 1 case (3 %). This showed that recurrent upper respiratory tract infections can predispose to rhinosinusitis. The presence of nasal polyps was also seen to be a predisposing cause for rhinosinusitis.
6. Out of 30 cases, it was observed that 7 cases had ailments from change of weather (23%), 3 cases had ailments from dust exposure (10%), 2 cases ailments from AC exposure (7%) , 2 cases from wet weather (7%).
7. In this study it was observed that out of 30 cases 12 cases belonged to psoric miasm (40%), 10 cases belonged to sycotic miasm (33%), and 6 cases belonged to psoro- sycotic (20%) and 2 cases (7%) belonged to psoro- syphilitic miasm. Hence, psoric miasm was dominating followed by sycotic miasm which shows that both miasms can be the fundamental cause in chronic rhinosinusitis.
8. Out of 30 cases the constitutional remedies given in this study were Natrum mur (5 cases, 16%) , Arsenicum album (3 cases, 10%), Pulsatilla (3 cases,10%) ,Nux vomica (3 cases, 10%), Calcarea carb (3 cases, 10%), Lycopodium (2 cases, 6%), Sepia (3 cases,10%), Lachesis (2 cases, 6%), Sulphur (3 cases, 10%), Phosphorous (2 cases, 6%), Silicea (2 cases, 6%) .
9. Potency selection was done based on susceptibility, sensitivity of the patient. Out of 30 cases, 21 required 200 potency (70%), 5 required 30<sup>th</sup> potency (17%) and 4 case required 1M potency (13%).
10. In this study, it was observed that out of 30 cases which were advised for

auxiliary management i.e., steam inhalation 10 cases were effective (33%), while 20 cases didn't show much effectiveness (67%).

11. The patient severity of symptoms in assessment score was moderate for 23 patients (77%) and severe for 7 patients (23%). Most of patients presented with moderate severity of signs and symptoms.
12. Out of 30 cases with the help of pre-treatment and post treatment score it was seen that 24 cases showed improvement (80%) and 6 cases didn't show improvement (20%) which proves the efficacy of homoeopathic constitutional medicines in treating rhinosinusitis.

## CONCLUSION

A total of 30 cases of rhinosinusitis were taken for the study during a period of 18 months. After a thorough case taking totality was formed a constitutional medicine was prescribed based on the symptom similarity. Regular follow ups were taken to assess the general condition of the patient and assessment outcome score for disease severity was utilized on every visit to assess the patient symptoms severity. Overall improvement was noted by evaluating the pre and post treatment scores. Majority of the cases were aged between 48 to 58 years. Natrum Muriaticum, Arsenicum album, Pulsatilla, Nux Vomica, Calcarea carbonica as constitutional remedies had predominance in the study. 200<sup>th</sup> potency was the frequently used potency. In the study frontal sinusitis was seen to be the most commonly affected. In few cases steam inhalation as an auxiliary line of management was advised along with constitutional medicine.

Wilcoxon Signed Rank test was used for statistical analysis and the result proved that the test is significant. The null hypothesis was rejected and the alternative hypothesis was accepted, thus this study reveals that homoeopathic constitutional medicines was effective in the treatment of rhinosinusitis. This study was conducted on a smaller

sample size and hence the study can be conducted on a larger sample size to validate the result.

## Declaration by Authors

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