

Dual Burden of CRS and DNS: Assessing the True Therapeutic Value of FESS

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ABSTRACT:

Introduction: CRS (chronic rhinosinusitis) is a complication of DNS (deviated nasal septum) and is responsible for a significant disease burden worldwide, with a prevalence of 11%. Methods: A comparative study of a hundred cases in the Comilla Medical College hospital (<https://www.cumc.edu.com>) and Cumilla Medical Center PVT LTD (<http://comillamedicalcentre.com>), Bangladesh. Set one: 50 surgeries were functional endoscopic sinus surgery (FESS)+ submucosal resection of the deviated portion of the septum (SMR); two 50 FESS surgeries were conducted from 01 January 2016 to 31 December 2024. Results: Males suffer more than females (64%; 32: set one) and (52%; 26: set two); rural and poor people are more affected by the disease: 76%; 38 in set one and 70%; 35 in set two. Symptoms were nasal obstruction, discharge, and headache in most patients (56%; 28: set one) and (40%; 20: set two). Follow-up schedule only one time 42; 84% in set one, but multiple in set two was 80% (40), revision surgery in set one 3;6%, and set two 35;70%. The mean age and follow-up duration in months were 40.86 ± 5.099 years and 14.54 ± 18.829 in set one, and 38.70 ± 8.094 years and 65.38 ± 28.749 in set two. The mean score of the Visual Analog Scale (VAS) before and after surgery in set one was 6.76 and .18, and set two was 6.66 and 6.60. Paired-sample t test showed significance in set one ($p < .001$) and non-significance in set two ($p = .083$). Univariate evaluation of factors showed sex, follow-up category, sex*follow-up category, age*follow-up category, SES, and SES*follow-up category were significant in set one. Still, except for the follow-up category, all were insignificant in set two. Conclusion: Our comparison showed that CRS with DNS

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patients' needs doubles the number of surgeries required at a time, consequently reducing the patient burden.

Keywords: CRS, DNS, FEES, SMR.

1. Introduction:

If symptoms of rhinosinusitis last for more than 12 weeks (about three months), it is defined as chronic rhinosinusitis (CRS); less than that, it is known as acute rhinosinusitis (ARS) [1]. CRS is subcategorized into cases with polyps (CRSwNPs) and patients without polyps (CRSsNPs) [2]. CRS is a significant global disease burden, affecting at least 11% of the population [3]. As a result, a marked economic burden is placed on the healthcare system, and the absence of people from the workplace reduces a country's overall productivity [4].

In reality, 'Sinusitis' was recognized as one of the top 10 physical health conditions for U.S. businesses in 1999 [5]. Furthermore, CRS incidence is increasing in middle age, affecting socioeconomic conditions, and breaching the harmony of life [6]. In the disease profile study in the U.K., the prevalence of CRS is higher than that of IHD (3.7%), D.M. (4%), heart failure (<1%), and stroke (<1%), with a lesser impact on patients' quality of life [7]. From Bangladesh's perspective, the prevalence of CRS is 15%, and the coincidence of CRS with DNS is 11.67% [8]. DNS increases the risk of impaired mucociliary clearance, obstruction of the ostiomeatal complex, and rhinosinusitis [9]. DNS is the main cause of nasal obstruction, which is the number one position in the world's statistical data [10]

The Study examines the prevalence, demographic characteristics, and disease burden of CRS among patients; the coincidence of CRS and DNS; and the outcomes of FEES with or without SMR to determine how to achieve better surgical outcomes for patients.

2. Methods:

It was a prospective cohort study of 100 patients in the Otolaryngology department at Comilla Medical

College Hospital (<https://www.cumc.edu.com>) and Cumilla Medical Center PVT LTD (<http://www.comillamedicalcentre.com>), Bangladesh, conducted between January 2016 and December 2024. Set one: 50 patients underwent FEES and SMR; set two: 50 patients had FEES only. My mark people were patients of the Otolaryngology and Head-Neck Surgery outpatient department. During the period, we found 5038 CRS patients, of whom 100 (1.99%) were selected with DNS. All necessary examinations and investigations were executed for diagnosis and treatment. A high-resolution CT scan of the nose and paranasal sinuses was performed to assess the anatomy of the osteomeatal complex, which is essential for FESS surgery. Here, definite factors are the participant's sex, residential status, socioeconomic condition, complaints, follow-up category, and revision surgery; continued factors are age in years, follow-up duration in months, and VAS scores before surgery and at 4 months after surgery, except during the 1-month surgical period. We review all data in SPSS 31. The significance level is set at < .05.

In detailed statistics, we investigate absolute factors by frequency and percentage, and constant factors by mean, S.D., minimum, and maximum. After assuming and exploring the normality of the Study, we perform statistical significance testing based on the hypothesis to reject the invalid hypothesis. We conducted a paired-samples t-test to compare the Visual Analog Score (VAS) before and after surgery in sets one and two. Univariate evaluation of the factors where the dependent variable was follow-up duration in months in sets one and two. Multivariate analysis of the factors where the dependent variables were the VAS score before and after the surgery in sets one and two.

3. Results:

In the detailed statistics, we examine absolute counts by frequency and percentage, with males predominant in both sets: set one was 64% (32) male and 36% (18) female, and set two was 52% (26) male and 48% (24) female. Residential status showed that the maximum victimization was living in the rural area in set one, rural 38 (76%), suburban 09 (18%), and urban 03 (6%), and in set two, rural 35 (70%), suburban 11 (22%), and urban 04 (8%). Economic condition was poor in both groups, in set one, poor 38 (76%), lower middle 07 (14%), and upper middle 05 (10%), and in set two, poor 35 (70%), lower middle 08 (16%), and upper middle 07 (14%).

Patient complaints were categorized by symptom severity, with the most common presentations being nasal obstruction, discharge, and headache, at 56% (28) in set one and 40% (20) in set two. Other was nasal obstruction and discharge was 8% (04), nasal obstruction, discharge, headache, and facial pain was 12 (24%), nasal obstruction, discharge, headache, facial pain, and olfactory dysfunction (OD) was 12% (06) in set one, nasal obstruction and discharge was 13 (26%), nasal obstruction, discharge, headache, and facial pain was 11 (22%), nasal obstruction, discharge, headache, facial pain, and olfactory dysfunction (OD) was 12% (06) in set two.

Another important value is the follow-up category, which also reflects the surgical outcome. Peri-surgical follow-up lasted a minimum of 1 month until the wound healed, including early surgical complications and subsequent management. We set the principal follow-up after peri-surgical recovery at 4 months, so the first follow-up occurs at that time. In case of a follow-up schedule, a one-time follow-up in set one was 84% (42), and in set two, 20% (10); multiple follow-ups at set one was 16% (08), and in set two, 80% (40). During follow-up, some patients required revision surgery to address residual symptoms. No need for revision surgery in

set one was 47 (94%), and in set two it was 30 (15%); revision surgery was required in 6% (3) in set one and 70% (35) in set two {Table 1}. In the case of constant factors, the mean and standard deviation of set one, age, were 40.86 ± 5.099 years, follow-up duration in months 14.54 ± 18.827 months, VAS score before and after surgery 6.76, and .18, and set two, age, were 38.70 ± 8.094 years, follow-up time 65.38 ± 28.749 months, VAS score before and after surgery 6.66, and 6.60 {Table 2}.

We performed a paired-samples t-test on the VAS scores before and after surgery. Set one showed $t=28.709$, $p<.001$; set two, $t=1.769$, $p=.083$ {Table 3}. Univariate evaluation of factors showed that, in both sets, most factors were significant in set one but insignificant in set two, except for the follow-up category, with the dependent variable being follow-up time. Set one showed that sex, $p=.003$, set two, $p=.129$, set one, follow-up category $p=<.001$, set two, $p=<.001$, set one, sex*follow-up category, $p=.007$, set two, $p=.415$, set one, age*follow-up category, $p=.003$, set two, $p=.294$, set one, SES, $p=.012$, set two, $p=.303$, set one SES*follow-up category, $p=.014$, set two, $p=.609$ {Table 4}.

Multivariate evaluation of factors showed that most factors were significant in set one, and all were insignificant in set two, except for the follow-up category. The dependent variables were the VAS scores before and after surgery. Set one, sex, VAS score before and after, $p=.026$ and $.560$, follow-up category, $p=.073$ and $<.001$, age, $p=.384$ and $<.001$, SES, $p=.794$ and $.016$, and symptoms, $p=.170$ and $.034$. Set two, sex, $p=.985$ and $.734$, follow-up category, $p=.047$ and $.030$, age, $p=.776$ and $.557$, SES, $p=.625$ and $.712$, and symptoms, $p=.829$ and $.777$ {Table 5}.

Figures one and two of the histogram VAS score before and after surgery in set one, and Figures three and four of the VAS score before and after surgery in set two.

Table 1: Frequency and percentage of explicit variables of sets one and two.

Factor	Type	Set One N-50		Set Two N- 50		Total N-100
		Frequency	Percentage	Frequency	Percentage	
Sex	Female	18	36%	24	48%	42
	Male	32	64%	26	52%	58
Residential Status	Rural	38	76%	35	70%	73
	Suburban	9	18%	11	22%	20
	Urban	3	6%	4	8%	7
Socioeconomic Status	Poor	38	76%	35	70%	73
	Lower middle	7	14%	8	16%	15
	Upper middle	5	10%	7	14%	12
Complaints of the patient	Nasal obstruction and discharge	4	8%	13	26%	17
	Nasal obstruction, Discharge, and headache	28	56%	20	40%	48
	Nasal obstruction, Discharge, headache, and facial pain	12	24%	11	22%	23
	Nasal obstruction, Discharge, headache, facial pain, and OD	6	12%	6	12%	12
	One time Follow-up	42	84%	10	20%	52
Follow-up Schedule	More than one time Follow-up	8	16%	40	80%	48
	Revision surgery	47	94%	15	30%	62

	Yes	3	6%	35	70%	38
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Table 2: Statistics of constant variables of sets one and two.

Factors	Set one	N-50			Set two	N-50		
	Age of the Participant	Follow-up in months	VAS score in before surgery	VAS score after surgery	Age of the Participant	Follow-up in months	VAS score in before surgery	VAS score after surgery
Mean	40.86	14.54	6.76	.18	38.70	65.38	6.66	6.60
Std. Deviation	5.099	18.827	1.572	.388	8.094	28.749	1.533	1.512
Minimum	30	3	4	0	25	4	4	4
Maximum	53	78	10	1	61	96	10	10

Table 3: Paired Sample t-Test.

Factors	Set one	N-50		Set two	N-50	
VAS score before t surgery-VAS score after surgery		df	P	t	df	P-Value
	28.709	49	<.001	1.769	49	.083

Table 4: Univariate Evaluation of Factors: Dependent Factor: Follow-up Time

Factors	Set one	N-50	Set Two	N-50
	F	P-Value	F	P-Value
Sex	9.835	.003	2.383	.129
Follow-up category	386.471	<.001	38130.738	<.001
Sex*Follow-up category	7.940	.007	.678	.415

Age*Follow-up category	2.931	.003	1.337	.294
SES	4.939	.012	1.227	.303
SES*Follow-up category	6.583	.014	.501	.609

Table 5: Multivariate Evaluation of Factors: Dependent Factors: VAS score before and after Surgery

Factors	Dependent variables	Set one	N-50	Set two	N-50
		F	P-Value	F	P-Value
Sex	VAS score before surgery	5.300	.026	.000	.985
	VAS score after surgery	.344	.560	.117	.734
Follow-up category	VAS score before surgery	3.370	.073	4.179	.047
	VAS score after surgery	289.181	<.001	5.002	.030
Age	VAS score before surgery	1.476	.384	.759	.776
	VAS score after surgery	8.8829	<.001	.359	.557
SES	VAS score before surgery	.232	.794	.475	.625
	VAS score after surgery	3.370	.016	.343	.712
Symptoms	VAS score before surgery	1.760	.170	.294	.829
	VAS score after surgery	3.178	.034	.368	.777

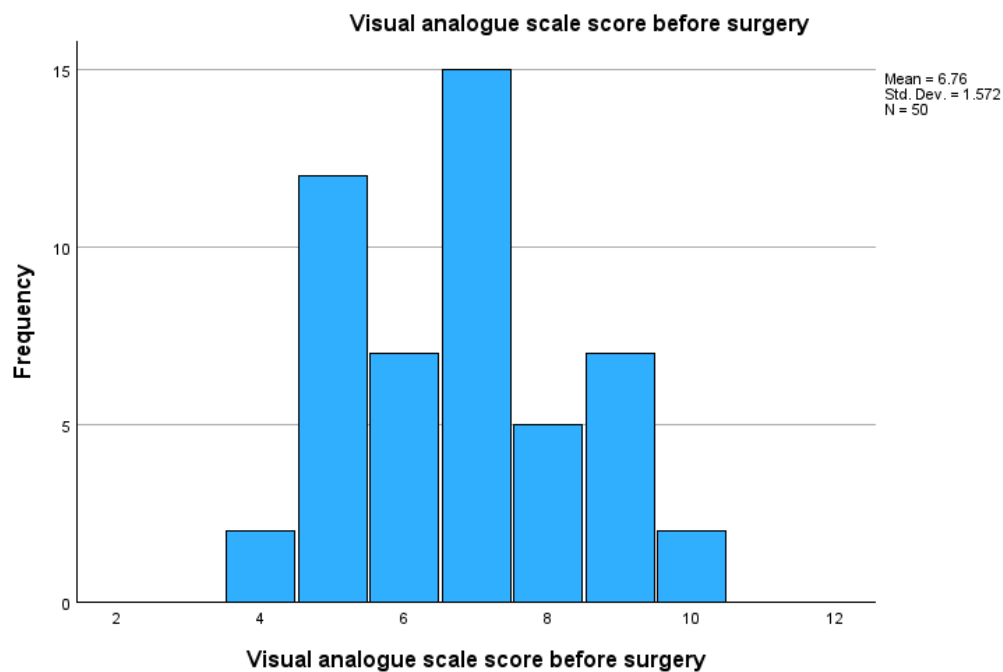
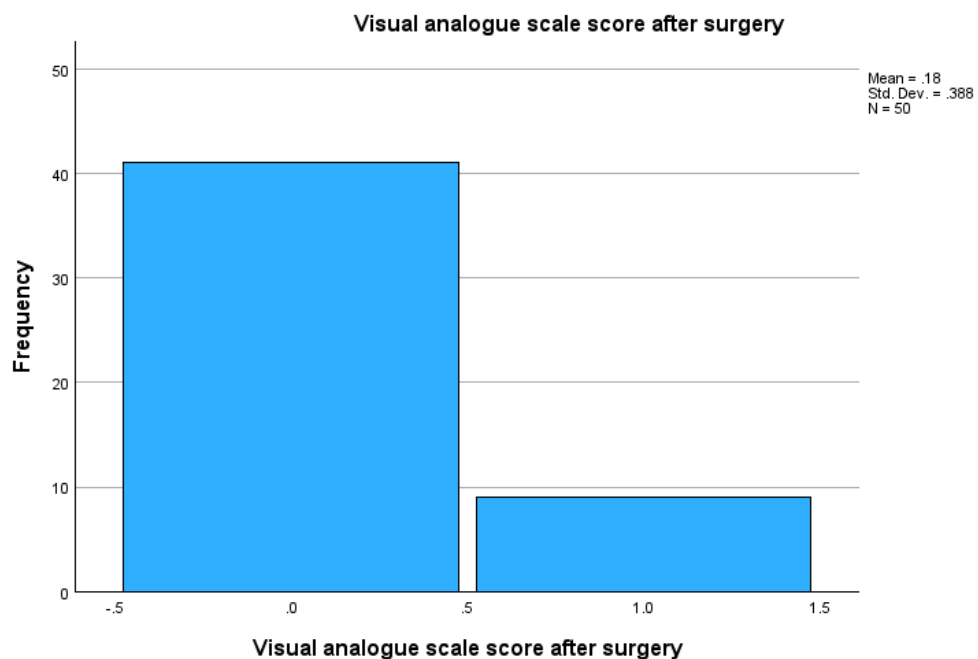
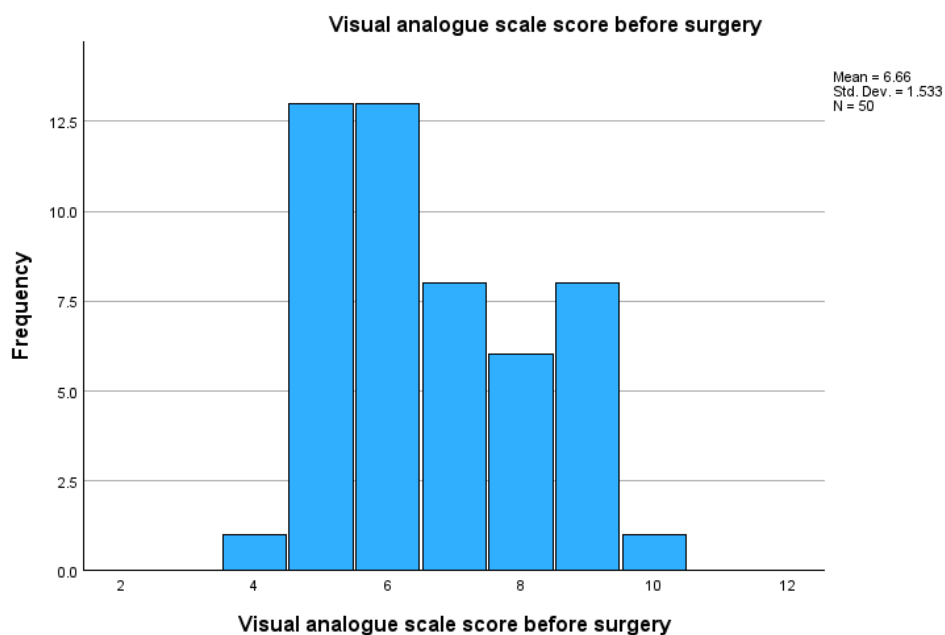
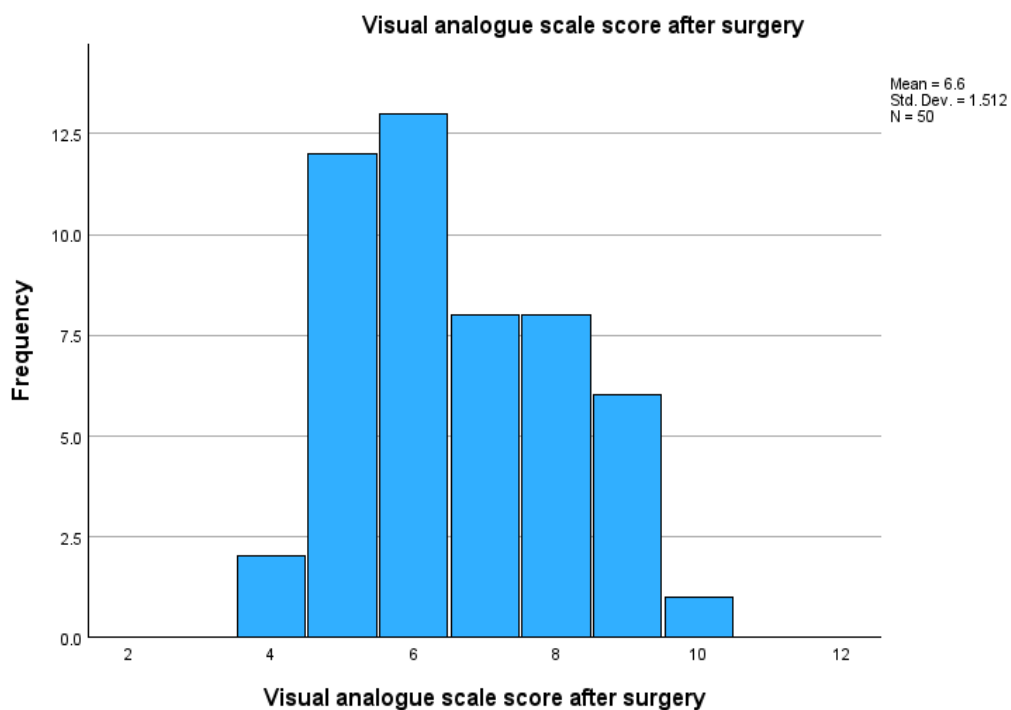
Figure 1: Histogram: VAS score in Set One FEES+SMR Before Surgery.**Figure 2: Histogram: VAS score in Set One FEES+SMR After Surgery.**

Figure 3: Histogram: VAS score in Set Two FEES Before Surgery.**Figure 4: Histogram: VAS score in Set Two FEES After Surgery.**

4. Discussion:

Usually, CRS manifests with other diseases like deviated nasal septum, nasal polyps, allergic rhinitis, fungal rhinitis, rhinosporidiosis, inverted papilloma, and other nasal tumors. Of them, a deviated nasal septum is the most common issue. Ninety-nine percent of people have some deviation from birth, and childhood trauma, but some of them produce symptoms. Recurrent sinus infection due to obstruction of the osteomeatal secretion causes facial pain and pressure headaches on the deviated side. A reduced sense of smell or taste is another important symptom that can make the patient's normal life hazardous. Most septal deviations involve the caudal and dorsal L-strut to some degree, but in cases where the obstruction does not involve the L-strut, the offending segment can be excised through submucosal resection (SMR). The Submucosal resection frees the airway, and the ostium of the sinuses gets a free air connection, which lightens the head. But, in the case of CRS, the mucosa of the sinus ostium was unhealthy, and chronic inflammatory changes caused a block, yet after SMR. So, FEES surgery aims to remove unhealthy mucosa and clear the ostium sinus opening to achieve the best surgical outcome.

4. 1. Sex of the Participant:

In the present study, males set one (32;64%) and set two (26;52%) outnumber females set one (18;36%) and set two (24;48%), consistent with our work with Aggarwal S. exhibited that males group A (19 out of 25;76%) and group B (16 out of 25;64%) [11], Chang et al. research revealed that males FESS control group (2149;59.56%) and study group FESS+SMR (589;67.4%), females FESS (1459;40.44%) and FESS+SMR (287;32.76%) [12], Mostafa et al. demonstrated that group A septoplasty males (11;55%) and group B septoplasty and FESS (12;60%) and females group A (9;45%) and group B (8;40%) [13], Fatima T. showed that males were 42;56%, females 33;44% [14], Maki et al. presented that males were 54.84%(34), and females were 45.16%(28) [15], Al-

Al-Abbasi AM et al. reported that 56.35% are male and 43.65% are female [16], and Thakur K et al. Also reported 78.3% male and 21.7% female [17], and Wardas P et al. reported 53% female and 47% male [18], which were inconsistent with our study. In a developing country like Bangladesh, the normal vaginal delivery of children average is 55%, which is higher in rural areas, about 70%, conducted by traditional dais [19]. So, birth trauma was one of the causes of DNS both for men and women. Men working outside of their boyhood; some are playing, cycling to their school and college. They are more likely to suffer from traumatic injury than females, and a deviated nasal septum. Because seasonal variation in these regions' variables is present and dust is ubiquitous, CRS symptoms are more severe year-round. However, females are going to school and college. They are also going outside, but few join in sports and other activities that are vulnerable to injury.

4. 2. Residential and Socioeconomic Status:

In our study, the residential status in set one showed that rural 76%;38, suburban 18%;9, urban 6%;3, and set two rural 70%;35, suburban 22%;11, urban 8%;4, and socioeconomic conditions indicated that set one was poor 76%;38, lower middle 14%;7, upper middle 10%;5, and set two poor 70%;35, lower middle 16%;8, upper middle 14%;7. In contrast, Jarvis D. et al. Reported that CRS affects the social spectrum equally, and the poor socioeconomic condition did not show any risk factor [20]. Therefore, in Bangladesh, poor, lower-middle-class, rural, and suburban people are more sufferers of CRS due to less knowledge of health education, overcrowding, poor housing, and fewer treatment facilities.

4. 3. Age of the Participant:

In my paper, the mean age was 40.86 ± 5.099 years in set one (ranged from 30-53 years) and 38.70 ± 8.094 years in set two (ranged from 25-61 years), whereas Aggarwal S et al proclaimed their study that in group A mean age was 29.68 years, group B 28.96, ranged was 18-50 years in both

group [11], Chang et al reported that in control group (FESS) age was 43.89 ± 17.36 years, study group FESS+SMR 39.79 ± 15.50 years [12], Fatima T et al showed off that mean age was 44.72 ± 12.5 years [14] near the current investigation. Mostafa et al.'s paper showed that the mean age of group A septoplasty was 26.10 ± 7.11 , Group B 29.70 ± 6.44 years [13], Maki et al unveiled that the age ranged was 9-74 years, and maximum ages were in 41-50 years [15], Al-Abbasi AM showed an age range from 9 to 74 years [16], Thakur K revealed that the majority 65% were in the age group of 15-25 years [17], Wardas P reported a mean age of 54.4 years [18] erratic with the present analysis. Age is important because disease patterns vary by age group, and it is necessary to determine which age group needs to be prioritized for care. The geographical distribution made the difference.

4. 4. Complaints of the Participant:

Regarding the symptoms, our Study exhibited nasal obstruction and discharge was 100% in both group, partially in set one headache 92%;46, facial pain 36%;18, and OD 12%;6, and set two headache 74%; 37, facial pain 34%;17, and OD12%;6 supported by Aggarwal et al reported that nasal obstruction and postnasal drip were 100% in both group, in group A had nasal discharge 80%;20, headache 64%;16, and group B nasal discharge 80%;20, and headache 68%;17 [11], Chang et al declared that nasal obstruction and constitutional symptoms of 100% in both control group (FESS), and study group (FESS+SMR) including asthma 26.72% (964) in FESS group, and 23.63% (207) in FESS+SMR group, allergic rhinitis 76.64% (2765) in FESS group, and 79% (692) in FESS+SMR group, atopic dermatitis 9.51% (343) in FESS group, and 9.47% (83) in FESS+SMR group [12], Fatima et al revealed that nasal obstruction was 100% (75), rhinorrhea/nasal discharge 90.7% (68), hyposmia/anosmia 80% (60), facial pain/pressure 73% (55) [14], Maki et al demonstrate that nasal obstruction was 85.4%(53), nasal discharge 69.3%(53), headache and facial pain 66.1%(41), hyposmia and anosmia 58%(36), voice changes

32.2%(20), snoring 29%(18), nose-bleed 9.6%(6), and significant sneezing 6.4%(4) [15], Thakur K showed nasal obstruction and discharged 96.6%, headache 55%, and facial pain 36.7% [17], Al-Abbasi AM reported nasal obstruction 85.7%, nasal discharge 69%, headache, and facial pain 66.6%, hyposmia, and anosmia 57.9%, voice change 32.5%, and snoring 24.5% [16], and Wardas' study considers patients' symptoms of nasal blockage, anterior nasal discharge, posterior nasal drip, reduced or lost sense of smell, and headache [18]. All the evidence from the research papers was logical in our study.

4. 5. The follow-up Schedule, Follow-up Period in Months, and Revision Surgery:

The success of the surgical procedure depends on patient feedback during follow-up. In the present work, our follow-up schedule is divided into two types: one-time and multiple follow-ups. Multiple follow-up visits showed that the patient's symptoms remained as before surgery. The ongoing study showed that a one-time follow-up was conducted in set one, 84% (42), and in set two, 20% (10); multiple follow-ups were conducted in set one, 16% (8), and in set two, 80% (40). The mean follow-up time in set one was 14.54 ± 18.827 months (range: 3-78 months), and in set two, 65.38 ± 28.749 months (range: 4-96 months). During follow-up, some patients required revision surgery to address residual symptoms. No need for revision surgery in set one was 47;94%, and in set two it was 15;30%; revision surgery was required in 3;6% in set one and 35;70% in set two. Aggarwal et al reported that the follow-up time was at 4th, 8th, 12th, and 24th week, postsurgical evaluation showed that group A(septoplasty) 14(56%) were free of symptoms out of 25(100%), and 11(44%) had remaining postnasal drip, group (septoplasty with FESS) 18(72%) were free of symptoms, 5(20%) were partial improvement, and 2(8%) had remaining postnasal drip.

They did not mention revision surgery for the patients' remaining symptoms [11]. Chang et al.'s paper demonstrated only which patients needed

revision surgery, the FESS group, 12.36% (446), and the FESS with SMR group, 9.36% (82) [12]. Mostafa et al proclaimed that only the CT scan findings in the preoperative and postoperative Lund and Mackay scores for the group A septoplasty rebuild the preoperative and postoperative MEAN $\pm$ SD was 8.1 $\pm$ 2.19, and 1 $\pm$ 1.213, $p=0.3449$, and preoperative ranging from 6-12, and postoperative 0-3, and group B septoplasty with FESS, 7.3 $\pm$ 1.49 and 1.05 $\pm$ 1.234, and ranging from 6-12, and 0-4, $p=0.911$, did not matching with our study profile [13]. Fatima et al. reported postoperative follow-up at 3, 6, and 12 months for symptom-free status or recurrence of sinusitis.

Postoperative symptom improvement during follow-up was nasal obstruction in 69 (92%), hyposmia/anosmia in 47 (63%), facial pain/pressure in 46 (62%), rhinorrhea in 61 (81%), and polyp recurrence in 18 (24%) [14]. Maki et al. reported a study that followed patients up to 6 months after surgery, and 14 (22.58%) of 62 patients required revision surgery. The reason for revision surgery was nasal polyposis 5(35.7%), persistent Anterior ethmoidal 3(21.4%), lateralization of the middle turbinate 2 (14.2%), fungal rhinosinusitis 2 (14.2%), persistent agger nasi cells 1(7.1%), and persistent frontal sinus disease 1(7.1%) [15].

Thakur et al.'s study showed that the follow-up was after 6 weeks, with both VAS scores and a high-resolution CT scan, and found that 86.7% patients were satisfied with post-surgical recovery, relief of symptoms was nasal obstruction 90%, nasal discharge 76%, headache 93.3%, and facial pain 96.7% in group A(FESS with septoplasty), 63.3% patients were satisfied with post-surgical recovery, relief of symptoms was nasal obstruction 63%, nasal discharge 63.3%, headache 83.3%, and facial pain 86.7% in group B(FESS) [17]. Becker DG's study reported that the healing time after minimally invasive surgery was four to six weeks, compatible with our work [21]. All papers were near our study.

4. 6. The VAS Scores before and after Surgery and Other Comparable Tests:

In the present study, in set one, the VAS scores before and after surgery were 6.76 and 0.18, respectively, and in set two, they were 6.66 and 6.60, respectively. The paired-sample t-test was significant in set one ($p < .001$) but not in set two ($p = .083$). Univariate evaluation of factors showed that, in both sets, most factors were significant in set one but insignificant in set two, except for the follow-up category, with the dependent variable being follow-up time. Set one showed that sex, $p=.003$, set two, $p=.129$, set one, follow-up category $p=<.001$, set two, $p=<.001$, set one, sex*follow-up category, $p=.007$, set two, $p=.415$, set one, age*follow-up category, $p=.003$, set two, $p=.294$, set one, SES, $p=.012$, set two, $p=.303$, set one SES*follow-up category, $p=.014$, set two, $p=.609$. Multivariate evaluation of factors showed that most factors were significant in set one, and all were insignificant in set two, except for the follow-up category. The dependent variables were the VAS scores before and after surgery. Set one, sex, VAS score before and after, $p=.026$ and $.560$, follow-up category, $p=.073$ and $<.001$, age, $p=.384$ and $<.001$, SES, $p=.794$ and $.016$, and symptoms, $p=.170$ and $.034$. Set two, sex, $p=.985$ and $.734$, follow-up category, $p=.047$ and $.030$, age, $p=.776$ and $.557$, SES, $p=.625$ and $.712$, and symptoms, $p=.829$ and $.777$. Aggarwal et al. compared the A (septoplasty) and B (septoplasty with FESS) groups 24th after surgery for nasal obstruction, postnasal drip, nasal discharge, and headache, using SPSS Fisher's/Chi-Square test to assess the p-value, which was significant in both groups [11]. Chang et al. distinguished between FESS and FESS with SMR assessed using Chi-Square and logistic regression tests, reported $\chi^2=5.8238$, $p=.0158$; in logistic regression, odds ratio=1.404, 95% CI=1.092-1.804, $p=.0081$ [12]. Mostafa et al assimilated the SNOT score between group A(septoplasty) and group B (septoplasty with FESS), which exhibited that the preoperative SNOT score mean of group A was 85.75 $\pm$ 7.18, with a range from 70-95, and postoperative

28±16.94, with a range from 15-75, P=0.461, preoperative score of the group B was 87.75±9.39, with a range from 70-100, postoperative 32.55±19.58, with a range of 15-80, p=0.527 [13]. Fatima et al. reported that the preoperative SNOT-22 mean score was 62.4±9.8, and the postoperative score was 28.7±7.6 (p < .001), which was significantly reduced [14]. Thakur et al evaluated both groups with a VAS score and CT scan findings, which were already discussed. They described a statistical difference between the two groups (A was FESS with septoplasty, and B was FESS) in nasal blockage and overall discomfort on VAS; VAS scores were significant, as was chronic maxillary sinus infection on high-resolution CT of the nose and paranasal sinuses [17].

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5. Conclusion:

We observed that CRS with DNS requires both FEES and SMR procedures in the same setting to overcome disease clearance and recurrence. Single surgery FESS is not enough, which is statistically proven and, at a time, reduces the healthcare burden. Given the small sample size, additional clinical tests are required to regulate the most current treatment strategies for the various forms of CRS.

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