

**Research Article**

# Audit of the effect of non-nasal specific scoring on the Postoperative SNOT22 questionnaire

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**Abstract**

The Sino-nasal outcome test (SNOT22) has been widely adopted in clinical practice and has been declared as the most suitable sinonasal outcome scoring system. It is simple disease specific encompassing 22 symptoms reflecting health burden of the rhino- logical patients.

Each item quantifies symptoms severity from 0(no problem) to 5 (worst symptom). The sum of each item results in a maximum score of 110. High score indicates poor outcome.

SNOT22 is recommended by the European Position Paper on Rhinosinusitis and Nasal polyps EPOS 2012 as the most adequate tool to evaluate the effectiveness of surgery for chronic rhino sinusitis [1].

The SNOT22 Questionnaire includes 9 non nasal specific symptoms that affects the preoperative and postoperative scoring of various rhinological surgical procedures.

The 9 non nasal specific symptoms are divided into 2 main categories:

A. Quality of life related (difficult falling asleep, wake up at night, wake up tired, and fatigue, reduced productivity, reduced concentration).

B. Psychologically related (frustrated/restless, sad, embarrassed).

The Aim of this Audit is to study the effect of these 9 non nasal symptoms on various Rhinological Surgical procedures performed by a single Surgeon at Both Emersons Green/Devizes NHS Treatment Centres in the period from May 2019 till December 2019.

**Materials and methods**

A Total of 20 patients were randomly selected who had various nasal surgeries performed by named ENT surgeon at Emersons Green/Devizes NHS treatment Centres in the period from May 2019-December 2019.

Every patient was seen preoperatively in the outpatient

clinic where he/she scored his/her symptoms using the SNOT22 questionnaire chart, 6 weeks postoperatively he/she scored again her symptoms using SNOT22 questionnaire

**Sino-Nasal Outcome Test-22 Questionnaire v4**

Below you will find a list of symptoms and social/emotional consequences of your nasal disorder. We would like to know more about these problems and would appreciate you answering the following question to the best of your ability. There are no right or wrong answers, and only you can provide us with this information. Please rate your problems, as they have been over the past two weeks. Thank you for your participation.

Considering how severe the problem is when you experience it and how frequently it happens, please rate each item below on how 'bad' it is by circling the number that corresponds with how you feel using this scale →

|  | No problem | Very mild problem | Mild or slight problem | Moderate problem | Severe problem | Problem as bad as it can be |
|--|------------|-------------------|------------------------|------------------|----------------|-----------------------------|
| 1. Need to blow nose                                       | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 2. Sneezing  | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 3. Runny nose  | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 4. Cough   | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 5. Post nasal discharge (driving at the back of your nose) | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 6. Thick nasal discharge                                   | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 7. Ear fullness  | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 8. Dizziness   | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 9. Ear pain/pressure                                       | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 10. Facial pain/pressure                                   | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 11. Difficulty falling asleep                              | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 12. Waking up at night                                     | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 13. Lack of a good night's sleep                           | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 14. Waking up tired  | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 15. Fatigue during the day                                 | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 16. Reduced productivity                                   | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 17. Reduced concentration                                  | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 18. Frustrated/restless/irritable                          | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 19. Sad  | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 20. Embarrassed  | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 21. Sense of taste/smell                                   | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| 22. Blockage/congestion of nose                            | 0          | 1                 | 2                      | 3                | 4              | 5                           |
| <b>TOTAL:</b>  | _____      | _____             | _____                  | _____            | _____          | _____                       |



unaware of their preoperative SNOT22 scores and a special focus was put on patient’s scoring of non-nasal specific symptoms.

The Cohort Age varied from the youngest of 19 years old to the oldest of 59 years old, Various Rhinological Procedures was performed including: Septoplasty, Functional Endoscopic sinus surgery (FESS) with or without Polypectomy, and Endoscopic Turbinoplasty.

All patients had a preoperative Counselling and received an information leaflet about their nasal procedure in addition to SNOT22 Questionnaire chart. Routine blood investigations, informed Consent was signed in the clinic.

Postoperatively all patients received oxymetazoline nasal drops 0.05% 2 drops twice daily for 5 days followed by isotonic Sterimar nasal sprays for 2 weeks, A 10 days course of 500 mg Clarithromycin antibiotic 12 hourly was prescribed in selected FESS Polypectomy patients where signs of active infection was illustrated intra-operatively.

All patients were seen 6 weeks postoperatively to assess their symptoms clinically and by SNOT22 questionnaire chart with a focus on the score of non-nasal specific symptoms

The Pre-operative SNOT22 score off all 20 patients ranged was from 92 and 15 with a mean score of 43 and the post-operative SNOT22 score ranged from 15 and 0 with a mean of 6 with an overall of 71% improvement in patient’s symptoms as illustrated in figure 1.

A total of 7 patients (30%) scored postoperatively a single or multiple non nasal specific symptom that affected the total outcome score of SNOT22 questionnaire, 4 patients had septoplasty procedures 2 patients had Endoscopic Turbinoplasty Procedures while only 1 patient had a Unilateral FESS procedure.

**Figure 1:** Summary of preop. & postop. Scores of various nasal surgeries.

| Procedure                | Preop.SNOT22 Score | Postop.SNOT22 Score | Postop. Non -nasal specific score |
|--------------------------|--------------------|---------------------|-----------------------------------|
| Fesspolypectomy          | 31                 | 1                   | 0                                 |
| Fesspolypectomy          | 40                 | 1                   | 0                                 |
| RT Fesspolypectomy       | 42                 | 0                   | 0                                 |
| Revision Fesspolypectomy | 32                 | 0                   | 0                                 |
| Fesspolypectomy          | 61                 | 0                   | 0                                 |
| Turbinoplasty            | 20                 | 6                   | 0                                 |
| FESS                     | 25                 | 0                   | 0                                 |
| Turbinoplasty            | 43                 | 8                   | 5                                 |
| Septoplasty              | 48                 | 3                   | 1                                 |
| Fesspolypectomy          | 18                 | 5                   | 0                                 |
| FESS                     | 85                 | 31                  | 18                                |
| Fesspolypectomy          | 47                 | 6                   | 0                                 |
| Septoplasty              | 92                 | 13                  | 6                                 |
| Fesspolypectomy          | 52                 | 2                   | 0                                 |
| Turbinoplasty            | 15                 | 2                   | 0                                 |
| Revision FESS            | 29                 | 0                   | 0                                 |
| Septoplasty              | 60                 | 13                  | 4                                 |
| Turbinoplasty            | 22                 | 0                   | 0                                 |
| Septoplasty              | 49                 | 12                  | 3                                 |
| Septoplasty              | 56                 | 15                  | 4                                 |

6 patients scored 1 in one or more of the non-nasal specific symptoms while one patient who had unilateral FESS scored 4 in 3 symptoms of lack of good night’s sleep, wake up tired, and wake up at night and score of 1 at symptoms of reduced productivity and concentration in addition of being restless and irritable with overall postoperative SNOT22 score of 31 compared to 85 preoperatively.

The Demographics of these 7 patients is illustrated in figure 2.

**Figure 2:** Illustrating postoperative non-nasal specific symptoms.

| Total no. of patients | Postop. Symptom       |
|-----------------------|-----------------------|
| 6                     | wake up tired         |
| 3                     | reduced productivity  |
| 1                     | frustrated            |
| 3                     | reduced concentration |
| 2                     | Fatigue during day    |
| 1                     | sad                   |
| 1                     | embarrassed           |

## Discussion

The 22-item Sino-Nasal-Outcome test (SNOT22) is a widely applied patient-reported outcome instrument used to assess the severity of symptoms associated with chronic Rhinosinusitis.

However recent publication suggest that it is also a validated outcome that can measure the improvement of patient’s symptoms post Nasal Obstruction and sinus Surgical procedures, as septoplasty, turbinoplasty [2], and endoscopic sinsus surgery [3].

Kennedy, et al. Grouped the SNOT22 questions into 4 main categories:

Nasal related (need to blow nose, sneezing, runny nose, nasal obstruction, loss of smell/taste and post nasal drip).

Ear/Facial related (ear fullness, dizziness, ear pain, facial pain & pressure).

Quality of life related (difficult falling asleep, wake up at night, wake up tired, and fatigue, reduced productivity, reduced concentration).

Psychologically related (frustrated/restless, sad, embarrassed).

Kennedy, et al. Concluded that SNOT22 is helpful tool for quantifying changes in symptoms and can be used to predict extent of post-operative improvement. While all of the components of the SNOT22 significantly improved after surgery, only runny nose, as well as cough were independent predictors of post-surgical SNOT22improvement [4].

This study revealed that non-nasal specific symptoms affected 30% of patients (7 patients) hence SNOT22 postoperative scores which is reflected on the outcome of



various nasal surgeries waking up tired was the commonest symptom (6 patients) that was recorded 6 weeks postoperatively but can't be directly correlated with surgical procedures.

## Conclusion

SNOT22 Questionnaire is a validated assessment of various nasal surgical procedures.

This study although of a small cohort of patients (20) revealed that 70% improvement of SNOT22 scores postoperatively but also highlighted that 7 patients (30%) recorded various scores of non -nasal specific symptoms that had an implication on the postoperative outcome scores.

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