

Assessing the quality of life for patients with chronic rhinosinusitis using the “rhinosinusitis disability index”*

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SUMMARY

Quality of life studies are increasingly being used as the primary outcome measure in chronic rhinosinusitis. The Rhinosinusitis Disability Index (RSDI) is a recently designed validated measure that has not been used in clinical studies. We have used the RSDI on 53 patients with chronic rhinosinusitis and compared the results to their endoscopic score and self-rated symptom score. Our data showed that the mean total quality of life score was 42 with a range of 5 to 69 (SD 17). The means of the functional, emotional and physical domains were 13 (range 0 to 27, SD 6), 13 (range 0 to 25, SD 7) and 16 (range of 2 to 32, SD of 7) respectively. There was no correlation between endoscopic score and either the patient's self-rated symptom score or RSDI score. The correlation between the self-rated symptom score and total quality of life score was significant ($p = 0.02$).

Various areas of the patients' quality of life were shown to be affected by chronic rhinosinusitis.

Key words: rhinosinusitis, quality of life, outcome measures, sinus surgery

INTRODUCTION

In recent years there has been an increase in the use and development of Quality of Life questionnaires. These measures have evolved as the emphasis on medical care has shifted from symptom scores and objective test results to an assessment of patient-centred effect of disease and response to treatment. Standardized instruments have been developed to assess quality of life in various specialties and one of the most recently developed quality of life tools is the Rhinosinusitis Disability Index: 'RSDI' (Benninger and Senior, 1997).

The RSDI has been validated and has shown consistent reliability when used on patients with chronic rhinosinusitis compared with normal subjects (Benninger and Senior, 1997). On examining the literature it would appear that it has not been used in other clinical trials to date. The aim of this study is to determine which areas of quality of life are affected in a group of patients suffering with chronic rhinosinusitis and to assess whether there is any correlation between objective nasal endoscopic score, self-rated symptom score and quality of life score.

MATERIALS AND METHODS

Patients

Fifty three patients with chronic rhinosinusitis were recruited from the Royal Brompton Hospital Nose Clinic (30 patients) and from advertisements placed in the local media asking for volunteers with symptoms of chronic rhinosinusitis (23 patients). There were 36 males and 17 females, with age range of 22 to 65 years (mean 45 years with a SD of 12.18).

In accordance with diagnostic criteria for chronic rhinosinusitis agreed upon at the International Conference on Sinus Disease in Princeton, New Jersey in 1993 (Lund and Kennedy, 1995), subjects were included if they had complained of nasal congestion or obstruction, post-nasal drip, facial pain or pressure and headache for more than three months.

Exclusions were patients with severe nasal polyposis who had multiple previous surgical procedures due to the associated mucosal changes and possible added effect of the disease on the quality of life. Patients with acute exacerbation of sinusitis and those who had nasal surgery three months previously were also excluded. Atopic patients were included if they fulfilled all entry criteria and did not have itching, sneezing and anterior watery rhinorrhoea as their main symptom. All patients had a

skin allergy test to 11 common aeroallergens and a positive test was defined as a weal measuring 3 mm more than the negative control. The study was performed with the approval of the Royal Brompton Hospital ethics committee and all subjects gave informed written consent.

Quality of life questionnaire

All patients completed a disease specific quality of life questionnaire ‘Rhinosinusitis Disability Index’ (appendix). Thirty questions were asked and each was scored on a 0 to 4 scale (0=never, 1=almost never, 2=sometimes, 3=almost always, 4=always). At the end of the questionnaire, the subjects had to rate how severe they felt their sinusitis was on a scale from 1 to 7 (1 indicating normal, 4 being moderate and 7 being severe). The RSDI was calculated both for a total score and for functional (questions 1-5, 13, 23, 28, 29), emotional (questions 12, 14-19, 21, 26, 27) and physical (questions 6-11, 20, 22, 24, 25, 30) domains.

Endoscopic examination

An experienced rhinologist examined the nasal cavity using a 30 degree rigid Hopkins rod endoscope (Karl Storz GmbH & Co., Tuttlingen, Germany). Both nasal cavities were examined and scored using the Lund and Mackay scoring system (Lund and Mackay, 1993). Polyps were scored from 0 to 2 with 0 indicating none, 1 and 2 indicating polyps down to and below the

middle turbinate, respectively. Discharge, oedema, scars or adhesions and crusting were scored from 0 to 2 with 0 indicating none, 1 indicating some and 2 extensive. The total endoscopic score for both nasal cavities was calculated.

Statistics

SPSS version 9 for windows software was used for the statistical analysis. Spearman’s rank correlation was obtained for the relationships between total endoscopic score, self-rated symptom score and the Quality of Life score.

Percentages of patients answering various questions were calculated for the Quality of Life questionnaire (Table 1).

RESULTS

Eighty one percent of the subjects reported that they had suffered from chronic rhinosinusitis for more than five years, 13% between two and five years and only 6% had suffered for one to two years. Skin prick tests showed that 64% of the group were non-atopic and 36% were atopic (6 females and 13 males).

The mean endoscopic score for both nasal cavities was 3 with a range of 0 to 9 and an SD of 2.5 (Figure 1). The patients’ mean overall rating of the ‘severity of sinusitis’ was 5 with a range of 1 to 7 and a SD of 1 (Figure 2), which fell into the moderate category. The mean total quality of life score was 42 with a range of 5 to 69 and a SD of 17 (Figure 3). When dividing the quality of life score into three domains, the ‘functional’ mean score was 13 (range 0 to 27, SD 6), the mean ‘emotional’ score was 13 (range 0 to 25, SD 7) and the mean ‘physical’ score was 16 with a range of 2 to 32 and a SD of 7 (Figure 4).

The data on the 30 patients recruited from the Nose Clinic at the Brompton Hospital was analysed separately from that of the 23 patients who responded to an advertisement. The results of the two groups, respectively, showed with mean endoscopic score of 3 and 2.5. The patients’ mean overall rating of the ‘severity of sinusitis’ of 5 and 5, mean total quality of life score of 44 and 38, functional score of 13 and 12, emotional score of 13 and 12 and Physical score of 17 and 14. This indicates an overall slightly less effect of the disease on the quality of life on the second group, who interestingly rated their own perception of the severity of

Table 1. Percentages of patients according to their answers to each of the RSDI 30 questions. Scores of 0-1 and 3-4 were both combined for simplicity.

Question	never/almost never (0 to 1)	sometimes (2)	Almost always/always (3 to 4)
1	30%	57%	13%
2	32%	57%	11%
3	40%	53%	7%
4	9%	57%	34%
5	21%	53%	26%
6	19%	55%	26%
7	34%	45%	21%
8	36%	38%	26%
9	32%	45%	23%
10	53%	38%	9%
11	57%	32%	11%
12	36%	51%	13%
13	81%	17%	2%
14	64%	32%	4%
15	45%	51%	4%
16	70%	25%	5%
17	58%	38%	4%
18	75%	23%	2%
19	42%	49%	9%
20	47%	40%	13%
21	34%	51%	15%
22	68%	21%	11%
23	70%	26%	4%
24	39%	38%	23%
25	45%	40%	15%
26	49%	42%	9%
27	38%	53%	9%
28	60%	30%	10%
29	57%	36%	7%
30	71%	25%	4%

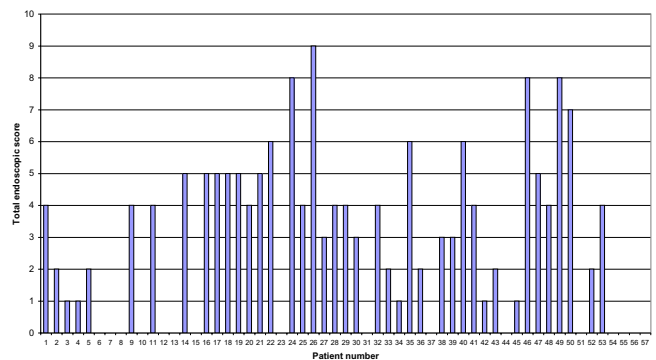


Figure 1. A graph showing the endoscopic score for each patient. Mean: 3, Range: 0 - 9 (12 patients had 0 total score), SD: 2.5 (possible minimum and maximum scores are 0 and 20, respectively).

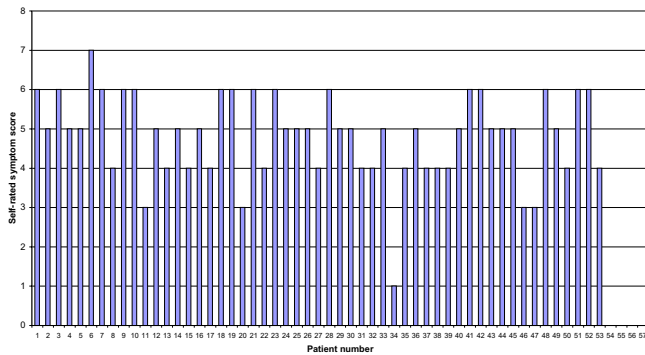


Figure 2. A graph showing the self-rated symptom score for each patient. Mean: 5, Range: 1 - 7, SD: 1 (possible minimum and maximum scores are 0 and 7, respectively).

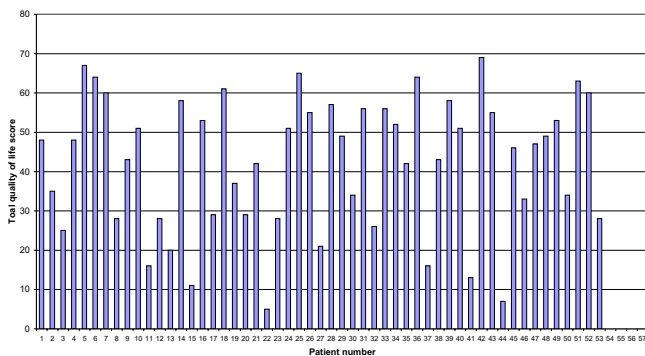


Figure 3. A graph showing the RSDI total score for each patient. Mean: 42, Range: 5 - 69, SD: 17 (possible minimum and maximum scores are 0 and 120, respectively).

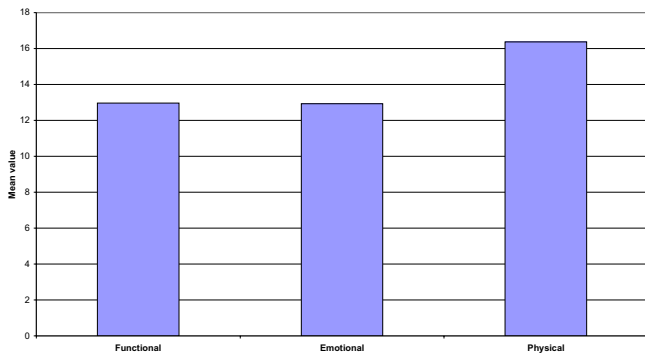


Figure 4. Contribution of the mean value of each subscale to the mean RSDI score.

Mean total score	= 42
Mean functional score	= 13
Mean emotional score	= 13
Mean physical score	= 17

the disease as equal to the group from the nose clinic. Spearman’s correlation coefficient for endoscopic score versus both self-rated symptom score and total quality of life score was not significant at - 0.15 (p = 0.28) and 0.017 (p = 0.9) respectively. However, the correlation between the self-rated symptom score and total quality of life score was significant at 0.4 (p = 0.02). When analysing the percentages of patients who answered each

question of the RSDI (Table 1) our data showed that more than fifty % of the subjects ‘sometimes’ felt that they were handicapped and were restricted in performing routine daily /recreational activities because of their chronic rhinosinusitis. thirty-four % of the group ‘almost always/always’ felt frustrated and more than fifty % felt fatigued at times because of their condition. Fiftyfive % of the subjects did not sleep well at times and twenty-six % were ‘almost always/always’ affected. More than half of the group ‘sometimes’ felt stressed in relationships with friends and family, felt irritable and had difficulty paying attention at times. Regarding being inconvenienced by a chronic runny nose or frequent sniffing being irritating to friends and family the group was almost equally split between ‘never/almost never’ and ‘sometimes’, with more than 20% of the group nearly always feeling troubled. Fortyfive % of the group ‘sometimes’ felt it was difficult to concentrate, due to pain or pressure and twentythree % felt it was ‘almost always/always’ a problem. Thirteen % of the group felt that food did not taste good most of the time and forty % felt taste was affected ‘sometimes’. The majority of the group did not avoid travelling, miss work/social activities, avoid people/socialising or have difficulties with gardening/housework because of their rhinosinusitis. Seventyone % of the subjects said that sexual activity was ‘never/almost never’ affected by their sinusitis problem.

DISCUSSION

Two types of quality of life questionnaire have been developed: general and disease specific. The most widely used and tested general quality of life measurement tool is the Medical Outcome Study Short Form 36 item Health Survey -SF-36 (Ware and Sherbourne, 1992). This instrument measures eight domains of general health status including physical functioning, role functioning (physical and emotional), bodily pain, general health, vitality, social functioning and mental health. General health-status questionnaires are able to compare the burden of illness across different medical conditions, but it has been suggested that they may be not responsive enough to small but clinically important changes in patients’ quality of life (Juniper, 1997). They may also be sensitive to changes in other medical conditions and affect the response disorder being measured (Benninger and Senior, 1997). This has led to the development of disease specific quality of life questionnaires such as the Rhinoconjunctivitis Quality of Life Questionnaire (Juniper and Guyatt, 1991), the Chronic Sinusitis-Severity-Based survey (Gliklich and Metson, 1995), the 31 item Rhinosinusitis Outcome measure - RSOM-31 (Piccirillo, 1995), the Sinonasal Outcome Test - SNOT-20 (Leopold et al., 1997) and the Rhinosinusitis Disability Index - RSDI (Benninger and Senior, 1997). The Chronic Sinusitis-Severity-Based survey requires the additional use of a general health quality of life tool whereas the RSDI, SNOT-20 and Rhinosinusitis Outcome measure include both disease specific and general health assessments. The Rhinoconjunctivitis Quality of Life Questionnaire is less specific to rhinosinusitis as it was designed for use in allergic rhinitis.

The SF-36 has been used in a series of studies in the USA and results showed that patients with chronic sinusitis had significant decrements in several of the subscales compared with the general US population (Metson and Gliklich, 2000). Patients with chronic sinusitis had significantly lower scores in measures of bodily pain and social functioning than any of the compared cohort groups including angina, congestive heart failure, chronic obstructive pulmonary disease and back pain/sciatica (Gliklich and Metson, 1995). As well as affecting bodily pain and social functioning, patients with chronic sinusitis had lower sub-scores in general health, vitality and physical role functioning than the general US population. Comparable results have been found in UK patients (Saleh and Lund, 2001, unpublished data)

The RSDI was easy to use and took subjects less than five minutes to complete. The mean total quality of life score was 42 (range 5 to 69), which indicates that the quality of life in most subjects was affected by chronic rhinosinusitis (Figure 3). There was no great difference between the three quality of life domains (Figure 4). Most questions were answered 'sometimes' rather than 'almost always/always'. This may have been because the group had moderate sinusitis rather than severe. The inclusion criteria prevented anyone entering the study with an acute episode of sinusitis so the data reflects how people felt their quality of life was affected on a normal day-to-day basis.

It is difficult to compare these findings with previous studies from the U.S.A. as a different quality of life questionnaire was used, and the patients in these studies had severe sinus disease, and were waiting for surgery (Gliklich and Metson, 1995).

It may be expected that subjects with worse endoscopic scores, showing more signs of sinusitis, would have a worse quality of life score. The result from the Spearman's correlation showed that there was no correlation between these variables. This disparity between endoscopic scores and patients' self-assessment has been noted before (Kennedy, 1992).

CONCLUSIONS

Using the RSDI, it was shown that the quality of life in patients with chronic rhinosinusitis was affected in various ways. It was difficult to compare the findings with previous studies as our group was less severe and a different quality of life tool was used.

The results from this study found no correlation between endoscopic score and either the patient's self-rated symptom score or total quality of life score. These findings further support the need to use a quality of life tool when assessing patient outcome, as objective scores alone cannot reflect how the patients' sense of well-being and ability to function is affected by their condition.

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APPENDIX

Rhinosinusitis Disability Index (RSDI)

The purpose of this scale is to identify difficulties that you may be experiencing because of your nose or sinus problems. Please answer: Never, Almost Never, Sometimes, Almost Always, Always to each item. Answer each item as it pertains to your nose and sinus problem only.

1 Because of my problem I feel handicapped.

Never Almost Never Sometimes Almost Always Always

2. Because of my problem I feel restricted in performance of my routine daily activities.

Never Almost Never Sometimes Almost Always Always

3. Because of my problem I restrict my recreational activities.

Never Almost Never Sometimes Almost Always Always

4. Because of my problem I feel frustrated.

Never Almost Never Sometimes Almost Always Always

5. Because of my problem I feel fatigued.

Never Almost Never Sometimes Almost Always Always

6. Because of my problem I don't sleep well.

Never Almost Never Sometimes Almost Always Always

7. I have difficulty with exertion due to my nasal obstruction.

Never Almost Never Sometimes Almost Always Always

8. I am inconvenienced by my chronic runny nose.

Never Almost Never Sometimes Almost Always Always

9. The pain or pressure in my face makes it difficult for me to concentrate.

Never Almost Never Sometimes Almost Always Always

10. The pain in my eyes makes it difficult for me to read.

Never Almost Never Sometimes Almost Always Always

11. I have difficulty stooping over to lift objects due to face pressure.

Never Almost Never Sometimes Almost Always Always

12. Because of my problem I feel stressed in relationships with friends and family.

Never Almost Never Sometimes Almost Always Always

13. Because of my problem I avoid travelling.

Never Almost Never Sometimes Almost Always Always

14. Because of my problem I feel confused.

Never Almost Never Sometimes Almost Always Always

15. Because of my problem I have difficulty paying attention.

Never Almost Never Sometimes Almost Always Always

16. Because of my problem I avoid being around people.

Never Almost Never Sometimes Almost Always Always

17. Because of my problem I am frequently angry.

Never Almost Never Sometimes Almost Always Always

18. Because of my problem I do not like to socialise.

Never Almost Never Sometimes Almost Always Always

19. Because of my problem I frequently feel tense.

Never Almost Never Sometimes Almost Always Always

20. Food does not taste good because of my change in smell.

Never Almost Never Sometimes Almost Always Always

21. Because of my problem I frequently feel irritable.

Never Almost Never Sometimes Almost Always Always

22. Because of my problem I have difficulty with strenuous yard work and housework.

Never Almost Never Sometimes Almost Always Always

23. Because of my problem I miss work or social activities.

Never Almost Never Sometimes Almost Always Always

24. My frequent sniffing is irritating to my friends and family.

Never Almost Never Sometimes Almost Always Always

25. Straining increases or worsens my problem.

Never Almost Never Sometimes Almost Always Always

26. Because of my problem I am depressed.

Never Almost Never Sometimes Almost Always Always

27. My problem places stress on my relationships with members of my family or friends.

Never Almost Never Sometimes Almost Always Always

28. My outlook on the world is affected by my problem.

Never Almost Never Sometimes Almost Always Always

29. Because of my problem I find it difficult to focus my attention away from my problems and on other things.

Never Almost Never Sometimes Almost Always Always

30. My sexual activity is affected by my problem.

Never Almost Never Sometimes Almost Always Always

Please evaluate the overall severity of your nasal-sinus problem

Normal			Moderate		Severe	
1	2	3	4	5	6	7