Sarcouncil journal of Medical sciences

ISSN(Online): 2945-3526

Volume- 02| Issue- 02| 2023

Research Article **Received:** 20-12-2022 | **Accepted:** 14-01-2023 | **Published:** 18-02-2023

Systemic Analysis of Endoscopic Sinus Complications and Assessment of Mental Well-Being

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Abstract: Introduction: Chronic sinusitis is symptomatic inflammation of the nasal cavities and paranasal sinuses lasting more than 12 weeks, 1 with clinical manifestations such as nasal obstruction, rhinorrhea, facial pressure pain, and decreased sense of smell, associated with endoscopic or CT findings of sinusitis. **Objective:** This study aims to study Systematic analysis of endoscopic sinus complications and assessment of the quality of life. **Patients and Methods:** In this study, data were collected for this study of patients with endoscopic sinuses, including 70 patients, which were divided into two groups, one of which was the patients' group (40) and the control group (30). A demographic analysis was conducted for sinus data in different hospitals in Iraq through the SNOT-22 program, where these data included the parameters age, sex, BMI, marital status, economic level, and educational level. An assessment of the quality of life of patients with sinusitis was carried out, which included the parameters related to sinus complications Sleep, Anxiety, Breathing, and Effectiveness, which were analyzed statistically by mean SD. The group of sinus patients was evaluated through SNOT-22 analysis, where the variables cough, breathing, runny nose, sleep, and sneezing were shown, which were designed on sinus patients before surgery and others after surgery, which lasted for six months. **Results and Discussion:** The patients' group included 9 (22.5%) and the control group 7 (23.3%) with a P-VALUE of 0.048, while the age older than 40 years included the patients' group 12 (30%) and the control group 11 (36.7%). To follow up, this study determined that male and female patients of the patients' group were more affected and increased than patients of the control group, with a P-value of 0.041. an analysis was conducted for the presence of nasal study, which included asthma, recurring infection, allergies, and immune disorders for both groups, where asthma patients' group 14 (35%) and control group 11 (36.7%) and recurring infection patients' group 8 (20%) and the control group 9 (30%), while the allergies where the patients' group 11 (27.5%) and the control group 6 (20%) with a P-VALUE 0.043. **Conclusion:** As a result of risk factors, previous symptoms, and SNOT-22 assessment, the patient group is considered to be more at risk for quality of life than the control group.

Keywords: SNOT-22; Endoscopic sinus; Asthma; Allergies; and Immune disorders.

INTRODUCTION

Chronic sinusitis is symptomatic inflammation of the nasal cavities and paranasal sinuses lasting more than 12 weeks, 1 with clinical manifestations such as nasal obstruction, rhinorrhea, facial pressure pain, and decreased sense of smell, associated with endoscopic or CT findings of sinusitis. [Smith, T.L. *et al.*, 2005 Rice, D.H, 1989; Chester, A.C. *et al.*, 2007]

Prevalence ranges from 7 to 27% in Europe, three from 2 to 16% in the United States, from 1.01 to 6.95% in Korea, from 5.5% in Brazil, and from 9.3% in Iraq. [Terris, M.H. *et al.*, 1994]

A new study shows that more than three-quarters of patients with chronic sinusitis (CRS) experienced an improvement in quality of life (QOL) after undergoing endoscopic sinus surgery (ESS). [Stammberger, H. *et al.*, 1990]

Investigators from Oregon Health & Science University (OHSU, Portland, USA), Stanford University Medical Center (SUMC, CA, USA), and other institutions conducted a multi-institutional retrospective study that analyzed a total of 302 CRS patients from three medical centers. Between July 2004 and December 2008, and a follow-up of patients for approximately one and a half years after surgery. Data were collected from computed tomography (CT), endoscopy score, and postoperative quality of life (QOL) [Engel, G.L, 1977]. In addition, patient factors were evaluated preoperatively for their ability to predict clinically significant outcomes so that surgeons could advise patients appropriately and optimize the choice of the surgical case. [Smith, T.L, 2017]

Sinusitis affects 14-16% of the US population and can cause significant physical symptoms, as well as significant functional and emotional impairment. Symptoms of CRS include nasal congestion, sinus pain and pressure, headache, and sneezing [Smith, T.L, 2017; Soler, Z.M. *et al.*, 2010]. Thus, CRS is often confused with the common cold, flu, or allergies. Because of the chronic nature of the disease and the relatively poor response of some patients to initial medical treatments, CRS patients undergo 500,000 surgeries annually in the United States alone, with the primary goal of improving their quality of life. [Smith, T.L. *et al.*, 2010; Hopkins, C. *et al.*, 2015; Soler, Z.M. *et al.*, 2011]

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DOI-https://doi.org/10.5281/zenodo.7653248

Nasal obstruction and decreased sense of smell are the most common symptoms (found in 97% and 90%, respectively, of patients with polyps presenting for surgical treatment). Sleep disturbances and runny noses are also common, as the size of the polyps' Nasal polyps correlates well with subjective nasal obstruction but does not predict the severity of other symptoms. [Fokkens, W.J. *et al.*, 2012]

Up to 60% of patients with polyps present with lower respiratory tract disease, including associated asthma, usually with adult onset. With the exception of central atopic compartment disease, which is an allergic-mediated disease caused by inhaled allergens, the association between nasal polyps and allergic rhinitis remains unclear; Nasal polyps have been reported to be less common in people with allergic rhinitis and allergic asthma in childhood than in the general population. [Hopkins, C. *et al.*, 2015; Orlandi, R.R. *et al.*, 2016; Draf, W, 1991]

Smoking does not appear to be a significant risk factor for chronic sinusitis with nasal polyps. Genetic factors likely play a role in the pathogenesis of the disease, and patients with this condition are more likely to report having a first-degree relative with adenoids. [Weber, R. *et al.*, 1996; Georgalas, C. *et al.*, 2011; Georgalas, C. *et al.*, 2013]

The most prevalent symptom is a nasal obstruction (81-95%), followed by congestion, pressure, facial fullness (70-85%), hyaline nasal discharge (51-83%), and decreased sense of smell (61-69%) [DeConde, A.S. *et al.*, 2016; Rudmik, L. *et al.*, 2016]. Although endoscopic rhino-sinus surgery is the standard surgical intervention for chronic sinusitis, it should be considered as an adjunct to the medical treatment of chronic sinusitis rather than a standalone procedure. This study aims to study the Systematic analysis of endoscopic sinus complications and assessment of the quality of life. [Fokkens, W.J. *et al.*, 2012]

Nowadays, there are reliable and valid questionnaires that make it possible to determine the quality of life in many diseases. The information obtained through these questionnaires provides valuable information about the patient's well-being and ability to manage in the community.

The quality of life of a chronic sinusitis patient is not only worse than that of the general population, but it is worse than that of people who suffer from other serious diseases such as high blood pressure, diabetes, and chronic pain.

This poor quality of life is due to the fact that when sinusitis becomes chronic, it results in a significant deterioration in the family, social and work life of those who suffer from it.

A recent study conducted in Korea showed that people with chronic sinusitis were more likely to be depressed and anxious than healthy people. People with chronic sinusitis were 41% more likely to suffer from depression and 45% more likely to suffer from anxiety, according to the study.

PATIENTS AND METHODS

In this study, data were collected for this study of patients with endoscopic sinuses, including 70 patients, which were divided into two groups, one of which was the patients' group (40) and the control group (30).

A demographic analysis was conducted for sinus data in different hospitals in Iraq through the SNOT-22 program, where these data included the parameters age, sex, BMI, marital status, economic level, and educational level, as shown in Table 1.

In Table 2, this study showed symptoms related to patients with sinusitis, which included a runny nose, cough, sneezing, ear fullness, dizziness, fatigue, embarrassment, reduced concentration, wake up at night.

The distribution of patients and control participants was carried out by SNOT-22 Score evaluation through the SNOT-22 program, which was designed among sinus patients evaluated through SNOT-22 with caseload patients for both groups (the patients' group and the control group).

An assessment of the quality of life of patients with sinusitis was carried out, which included the parameters related to sinus complications Sleep, Anxiety, Breathing, and Effectiveness, which were analyzed statistically by mean SD.

The group of sinus patients was evaluated through SNOT-22 analysis, where the variables cough, breathing, runny nose, sleep, and sneezing were shown, which were designed on sinus patients before surgery and others after surgery, which lasted for six months.

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RESULTS

Table 1: Demographic results of endoscopic sinus for patients and controls

Variables	Patients (40)	Controls (30)	P-value
Age			
Less than 40	9 (22.5%)	7 (23.3%)	0.048
More than 40	12 (30%)	11 (36.7%)	0.041
Normarical age mean ±age	19 (47.5%)	12 (40%)	0.04412
sex			
male	27 (67.5%)	18 (60%)	0.041
female	13 (32.5%)	12 (40%)	0.042
bmi			
up to 28	24 (60%)	19 (63.3%)	0.046
less than 28	16 (40%)	11 (36.7%)	0.047
Marital status			
single	14 (35%)	13 (43.3%)	0.037
married	26 (65%)	17 (56.7%)	0.038
economic level			
low	10 (25%)	9 (30%)	0.0468
middle	23 (57.5%)	15 (50%)	0.0426
high	7 (17.5%)	6 (20%)	0.0412
educational level			
low	8 (20%)	7 (23.33%)	0.068
middle	18 (45%)	14 (46.7%)	0.049
high	14 (35%)	9 (30%)	0.042
Presence of nasal			
asthma	14 (35%)	11 (36.7%)	0.0485
recurring infection	8 (20%)	9 (30%)	0.04
allergies	11 (27.5%)	6 (20%)	0.043
immune disorders	7 (17.5%)	4 (13.3%)	0.0445

Table 2: Symptoms related to patients with sinusitis

Symptoms	Patients (40)	Controls (30)	P-value
Runny nose	4 (10%)	4 (13.3%)	0.0475
Cough	8 (20%)	2 (6.7%)	0.032
Sneezing	3 (7.5%)	4 (13.3%)	0.034
Ear fullness	1 (2.5%)	1 (3.3%)	0.0489
Dizziness	7 (17.5%)	7 (23.3%)	0.0452
Fatigue	9 (22.5%)	5 (16.7%)	0.0421
Embarrassed	2 (5%)	2 (6.7%)	0.0477
Reduced concentration	3 (7.5%)	2 (6.7%)	0.0467
Wake up at night	3 (7.5%)	3 (10%)	0.0466

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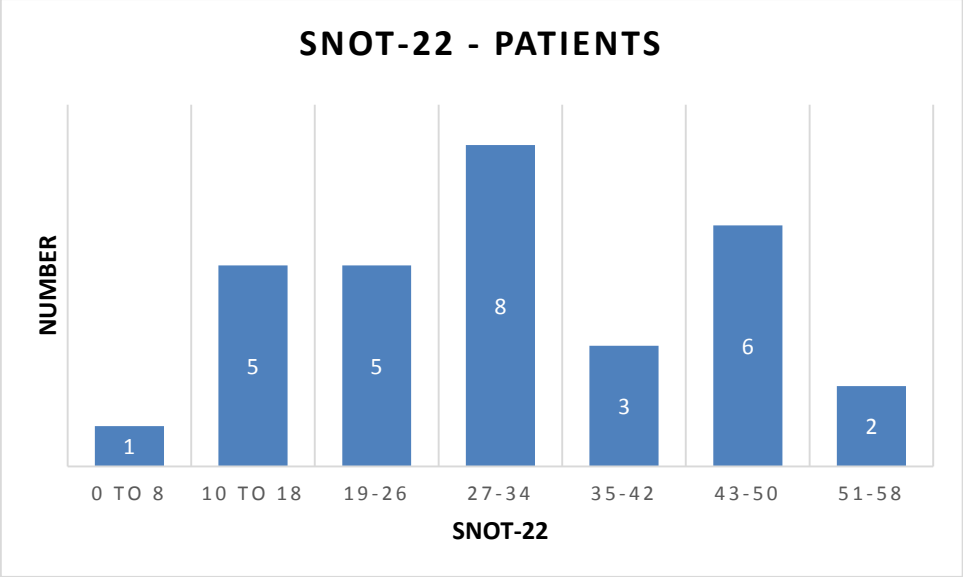

Fig 1: Snot-22 - Patients

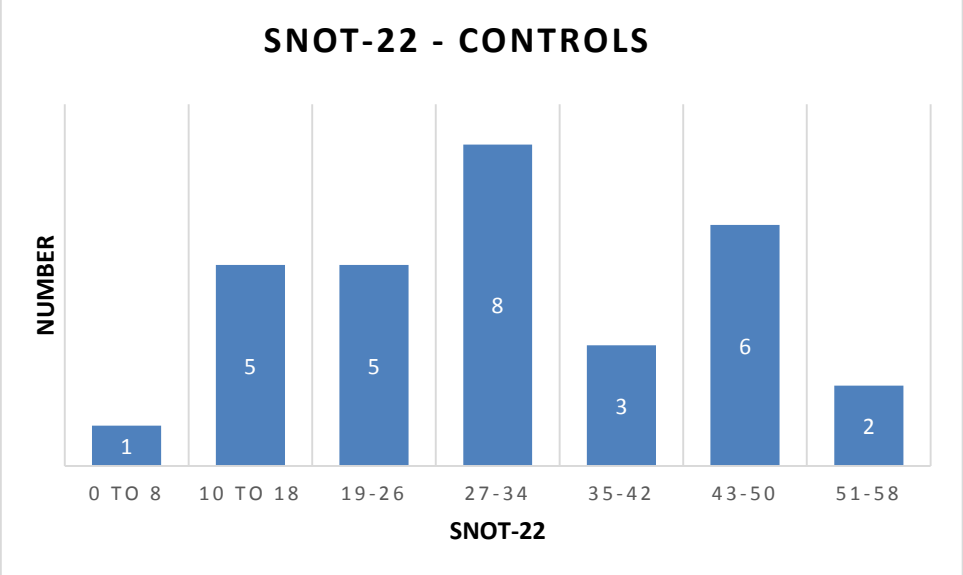

Fig 2: Snot-22 - CONTROLS

Table 3: Evaluation of the quality of life according to SNOT-22

Variables	Patients	Controls	P-value
Sleep	40±10	30±5	0.0411
Anxiety	55±9	40±4.4	0.046
Breathing	65±4	48±8	0.038
Effectiveness	47±3.8	33±5	0.034

Table 4: Evaluation of outcomes for patients before and after surgery during six months according to the SNOT-22

Variables	Patients before surgery	Patients After surgery	P-value
COUGH	50±6.5	30±4.5	0.037
Breathing	53±3.3	45±4.4	0.039
Runny nose	47±5.2	33±7.3	0.033
Sleep	65±7.9	51±6.6	0.025
Sneezing	44±5.8	36±6.2	0.028

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Table 5: Diagnosis of mental health-related complications

	Patient 40	**Control, 30**	**P-value**
Excessive anger	*4 (10)*	*1 (3.3)*	<0.001
Social function	*5(12.5)*	*3(10)*	0.55
Vitality	*3(7.5)*	*3(10)*	0.00
Emotional role	*6(15)*	*2(6.6)*	0.01
depression	*12(30)*	*3(10)*	<0.004
Loss of interests	*8(20)*	*2(6.6)*	0.02
Loss of pleasure	*6(15)*	*4(13.3)*	0.11
Anxiety	*10(25)*	*3(10)*	0.000887

DISCUSSION

In this study, 70 patients were recruited, including 40 patient groups and 30 control groups, as it was implemented in different hospitals in Iraq for the period 2020 to 2021. This study presented parameters related to the demographic analysis data for patients with paranasal sinuses, as this study indicated that the age is less than 40 years. The patients' group included 9 (22.5%) and the control group 7 (23.3%) with a P-VALUE of 0.048, while the age older than 40 years included the patients' group 12 (30%) and the control group 11 (36.7%) as shown in Table 1. To follow up, this study determined that male and female patients of the patients' group were more affected and increased than patients of the control group, with a P-value of 0.041. [Fokkens, W.J. *et al.*, 2012]

Accordingly, an analysis was conducted for both patients and control groups to measure BMI and was divided into two types; UP TO 28 and LESS THAN 28, where UP TO 28 included 24 patients (60%) for the control group 19 (63.3%). In addition, an analysis was conducted for the PRESENCE OF NASAL study, which included ASTHMA, RECURRING INFECTION, ALLERGIES, and IMMUNE DISORDERS for both groups, where ASTHMA patients' group 14 (35%) and control group 11 (36.7%) and RECURRING INFECTION patients' group 8 (20%) and the control group 9 (30%), while the allergies where the patients' group 11 (27.5%) and the control group 6 (20%) with a P-VALUE 0.043.

Symptomatic analysis was performed for both patient and control groups, including RUNNY NOSE 4 (10%), 4 (13.3%), COUGH 8 (20%), 2 (6.7%), SNEEZING 3 (7.5%),4 (13.3%), EAR. FULLNESS 1 (2.5%), 1 (3.3%), DIZZINESS 7 (17.5%), 7 (23.3%), FATIGUE 9 (22.5%), 5 (16.7%), EMBARRASSED 2 (5%), 2 (6.7%), REDUCED CONCENTRATION 3 (7.5%), 2 (6.7%), WAKE UP AT NIGHT 3 (7.5%), 3 (10%) as shown in Table 2.

The two groups of patients and control were evaluated by relying on SNOT-22, as the group of patients is considered the most infected with sinuses for ages that ranged from 27-34, and the number of cases reached 8, from 10 to 10, while in the control group, the number of cases was 8, and it included one case, which reached to 99 in the patient group, while it was the highest in SNOT-22 for control patients, of which two cases were identified, one of which was 52 and 58, as shown in Figure 1. [Snidvongs, K. *et al.*, 2012]

In Table 3, the quality-of-life assessment according to SNOT-22 was carried out for the patients, which included Sleep, Anxiety, Breathing, and Effectiveness, and the most severe was breathing which was 65 ± 4 for the patient group and 48 ± 8 for the control group with a P-VALUE of 0.038.

In addition, an evaluation of patients' outcomes before and after surgery during six months was performed according to the SNOT-22 for these parameters, which included COUGH for patients 50±6.5 30±4.5, control, BREATHING for patients 53±3.3, control 45±4.4, and RUNNY NOSE47±5.2 for the control group, 33±7.3.

For the SLEEP patient group, 65 ± 7.9; for the control group, 51 ± 6.6 and for the SNEEZING patient group, 44 ± 5.8; for the control group, 36 ± 6.2.

In previous studies, it was found that chronic sinusitis can cause symptoms of depression or a behavioural disorder, as it was found in this study that there is an effect and a statistical relationship between the behaviour of disturbance and the sinuses of 20% of children.

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CONCLUSION

This study shows that the majority of patients with sinusitis do not have a high quality of life, and most patients suffer from the risk of sleep apnea, especially for ages less than 40. This study shows two groups of cases, one representing the patients' group (40) and the other representing the control group (30). As a result of risk factors, previous symptoms, and SNOT-22 assessment, the patient group is considered to be more at risk for quality of life than the control group.

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Source of support: Nil; **Conflict of interest:** Nil.

Cite this article as:
Al-Hussari, Z.N.A., Sajed, H.K.M. and Ali Saeed, A.H. "Systemic Analysis of Endoscopic Sinus Complications and Assessment of Mental Well-Being." *Sarcouncil journal of Medical sciences* 2.2 (2023): pp 17-23.

Publisher: SARC Publisher