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Outcomes of Covid-19 on Nasal Disorders and Assessment of Quality of Life in Post-Covid Patients.

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Abstract

Introduction:
Studies and discussions about different forms of presentation began to spread COVID-19 and its consequences and effects, including olfactory imbalances such as sleep disturbances, anxiety and depression, activity, and breathing.

Target:
Describe the health outcomes of COVID-19 on nasal disorders and assess the quality of life of post-Covid patients

Method:
This study is a descriptive, qualitative study of 100 participants suffering from nasal disorders because of Corona, and this study includes women and men. This study is concerned with age, sex, smoking and alcohol factors, weight, economic factor, and comorbidities.

Results:
A total of 100 participants were evaluated for nasal disorders. Anxiety, sleep, and breathing was among the disturbances that affected patients more than control. Among these symptoms, Epistaxis and secretion with blood were identified as the main symptoms that cause the impaired sense of smell that accompanies it in most patients. Patients in contact with the virus developed adversely with severe sleep difficulty, anxiety, headache, etc., resulting from nasal disorders, which recurred through associated symptoms.

Conclusion:
In conclusion, for COVID-19, the impairment of the sense of smell was mostly sudden, and the loss of the sense of smell was the most prevalent dysfunction, which developed with the highest mean days when compared to other senses of smell. The use of oral or topical medications did not interfere with disease progression, and patients presented with an impaired sense of smell and nasal inflammatory changes when compared to control samples. In addition
Therefore, it has an important effect on sleep quality in COVID-19 positive patients in the ages of 33-65 patients.

Keywords: Covid-19; Nasal disorders; Arterial hypertension; Diabetes; Heart disease

Introduction

The ability to smell can be affected by changes in the nose, in the nerves going from the nose to the brain, or in the brain **[1,2].**
Since disorders of smell are rarely life-threatening, they may not receive the necessary medical attention **[3].** However, these disorders can affect the psychological side of the patient because they may lose the ability to enjoy pleasant smells and may interfere with the patient's ability to perceive harmful chemicals or gases**. [4]**

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Nerves in the nose help distinguish smells. This kind of feeling is transmitted to the brain, which in turn processes it together, but in some cases, the patient suffers from a loss of sense of smell because of Covid-19, which causes loss of breath. **[5]**

Partial loss of smell (hyposmia) and complete loss of smell (anosmia) are the most common disorders of smell and taste. The first sign that patients notice when their ability to smell decline is their inability to sense the flavour of the food they eat. **[6]**

A small area of the mucous membrane that lines the nose (olfactory epithelium) contains specialized nerve cells called olfactory receptors. These receptors have hairy projections (cilia) that can sense odors. **[7]** Molecules carried in air through the nasal passage stimulate these cilia, causing them to release fluid Nerves in adjacent nerve fibers. **[8]** Nerve fibers extend upward through the bone that forms the roof of the nasal cavity (the cribriform plate) and then connect with enlarged nerve cells called olfactory bulbs. **[9]** These olfactory bulbs form the cranial nerves of smell (olfactory nerves). Nerve signals are transmitted through the olfactory bulbs along the olfactory nerves to the brain. The brain interprets the nerve signal as a distinctive smell. **[10,11]** The area of the brain responsible for the memory of smells and flavours, which is in the middle part of the temporal lobe, is stimulated. This memory helps the person to identify to smells previously exposed to and distinguished. **[12]**

Six months after infection with the coronavirus, up to 1.6 million people in the United States are still unable to smell or have experienced a change in their ability to smell. **[13]** The sensory loss associated with infection with the Coronavirus is not yet known, but scientists believe that it is caused by damage to infected cells in a part of the nose called the olfactory epithelium. These olfactory neurons help humans smell. **[14]**

French studies indicate that the cells supporting the olfactory epithelium are the cells most often infected by the virus, and this presumably leads to the death of the neurons themselves. **[15]** According to this study, the genetic locus that affects nasal susceptibility to COVID-19 is associated with two genes related to the sense of smell. This genetic risk factor increases the likelihood that a person infected with the Coronavirus will experience a loss of smell or taste by 11 percent, which means that a genetic characteristic for each person determines whether he has anosmia. **[16]**

In the study, among a group of 69,841 people with corona, 68 percent of them reported losing their sense of smell or taste as one of the symptoms. After comparing genetic differences between those who lost their sense of smell and those who reported not experiencing this effect, the study team found a region of the genome associated with this split located near two genes inside the nose, which are responsible for smelling and play a role in odor metabolism. **[17]**

This study aims to describe the health outcomes of COVID-19 on nasal disorders and assess the quality of life of post-Covid patients.

Material and Method

Collection sample

In this study, an evaluation was carried out to describe the health outcomes of COVID-19 on nasal disorders and assess the quality of life of post-Covid patients on 100 sick cases, which were carried out in several hospitals in Iraq from July 2020 to November 2021, as these were included to study both the sense of smell and nasal disorders after a corona.

Method

100 patients between the ages of 20 and 65 were collected from several hospitals through a specific questionnaire between July 2020 and November 2021.

Age, weight, sex, comorbidities, income side, smoking, alcohol use, and socioeconomic status were used to divide the study's participants into the patient group and the control group, respectively.

The inclusion and exclusion criteria considered, in addition to clinical and subjective data, were obtained by completing an online questionnaire, and all patients were asked to complete a short version of the Olfaction Disorders Questionnaire.

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The remaining questions about the sense of smell and taste were obtained from the National Health and Nutrition Questionnaire of the Iraqi Ministry of Health.
The following data were examined in this study
1. Personal and family history.
2. Taking medications
3. Emotional symptoms (examination of depression and anxiety).
4. Examination of comorbidities.
5. Activities of daily living.
Odor and olfactory disturbances are common symptoms during acute SARS-CoV-2 infection. Although in most cases, complete recovery from the dysfunction occurs within the first month or two, persistence in post-COVID syndrome is not uncommon and, in this study, we Distributed of olfactory disorders among the patients for three types (microsmia, phantosmia, presbyosmi)
Due to mucositis, nasal obstruction, and olfactory receptor impairment, most people experience temporary loss of smell during viral upper respiratory tract infections. In some cases, these olfactory disturbances may persist even for years. Therefore, Pearson correlation analysis and logistic analysis were performed to find out the risk factors and to assess the quality of the relationship Statistical.

Ethical approval
To protect the rights, safety, and health of the patients taking part in this study, ethical and scientific criteria that are based on globally accepted norms have been taken into consideration when collecting patient demographic data and information. Additionally honored were the patient's autonomy, their agreement to supply the needed information, and the privacy of their personal information.
Permission and consent were obtained from the implementing authorities for the aim of creating this study to use the methodologies.

Results

Table 1- Demographic features of patient outcomes

Variables	**Patients (N=40)**	**Control (N=60)**	**P-value**
Age, N (%)			
25-34	7 (17.50%)	9 (15%)	0.046
35-44	10 (25 %)	14 (23.33%)	0.0465
45-54	11 (27.5%)	16 (26.67%)	0.0489
55-65	12 (30%)	21 (35%)	0.042
BMI (Kg/m2)			
24-27	8 (20%)	15 (25%)	0.042
28-31	14 (35%)	18 (30%)	0.042
32-35	18 (45%)	27 (27%)	0.035
Sex			

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Male	25 (62.5%)	33 (55%)	0.039
Female	15 (37.5%)	27 (45%)	0.038
Comorbidities			
Arterial hypertension	10 (25%)	17 (28.33%)	0.041
Diabetes	14 (35%)	21 (35%)	0.05
Heart disease	16 (40%)	22 (36.67%)	0.039
Material status			
Married	16 (40%)	24 (40%)	0.05
Divorced	15 (37.5%)	22 (36.37%)	0.049
Single	9 (22.5%)	14 (23.33%)	0.0492
Incomes Side			
Low	10 (25%)	15 (25%)	0.05
Moderate	13 (32.5%)	18 (30%)	0.0481
High	17 (42.5%)	27 (45%)	0.0492
Smoking			
Yes	28 (70%)	24 (40%)	0.035
No	12(30%)	36 (60%)	0.036
Alcohol			
Yes	12 (30%)	15 (25%)	0.035
No	28 (70%)	45 (75%)	0.045
Medication			
Yes	8 (20)	6 (10)	0.77
No	28 (80)	55 (90)	0.64

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Table 2- Symptoms associated with the patient resulting from Covid-19.

Parameters	***Patients (N=40)***	***Control (N=60)***	***P-value***
Burning in the nose	**5 (12.5%)**	**7 (11.67%)**	**0.048**
Dry nose	**8 (20%)**	**11 (18.33%)**	**0.045**
Epistaxis	**10 (25%)**	**16 (26.67%)**	**0.049**
Nasal obstruction	**10 (25%)**	**11 (18.33%)**	**0.041**
secretion with blood	**7 (17%)**	**15 (25%)**	**0.048**

Table 3- Distribution of olfactory disorders among the patients of this study.

Variables	**Patients (N=40)**	**Control (N=60)**	**P-value**
complete anosmia	3 (7.5%)	4 (6.67%)	0.047
microsmia	6 (15%)	9 (15%)	0.05
phantosmia	8 (20%)	10 (16.67%)	0.042
presbyosmi	9 (22%)	11 (18.33%)	0.0392

Table 4- Quality of life assessment to the two groups of this study according to the program.

Variables	**Patients (N=40)**	**Control (N=60)**	**P-value**
Aanxiety	1.7± 1.3	1.6± 2.8	0.048
Depression	1.5± 1.8	2.2± 1.6	0.0486
Effectiveness	2.6 ± 2.1	2.8 ± 3.5	0.042
Breathing	2.3 ± 2.8	3.1 ± 2.6	0.046
Sleep	1.3 ± 2.5	2.3 ± 2.2	0.042

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Table 5 - Logistic Evaluation of affected parameters of patients' analysis.

Parameters	Patients (N=40)	Control (N=60)	P-value
Age			
20-35	0.82 (0.6-1.2)	0.77 (0.6-1.0)	0.65
36-45	1.1 (0.89-1.3)	1.3 (0.6-1.6)	0.88
46-60	1.23 (0.97-1.61)	1.2 (1.0-1.7)	0.064
Burning in the nose	2.3 (1.9-6.4)	1.67 (1.5-2.5)	0.045
Dry nose	1.32 (1.1-2.5)	1.36 (1.24-1.7)	0.012
Epistaxis	5.3 (2.1-7.9)	1.21 (0.8-1.9)	0.042
BMI (Kg/m2)	5.2 (3.4-8.7)	1.7 (0.9-1.8)	0.047
Smoking	2.46 (1.9-6.5)	1.87 (1.4-2.5)	0.023
microsmia	1.33 (1.2-2.6)	1.42 (1.1-1.8)	0.017
phantosmia	4.5 (3.1-7.8)	3.3 (0.9-4.8)	0.046
presbyosmi	5.2 (3.2-8.9)	4.7 (0.9-7.8)	0.048

Discussion

In this study, 100 cases of COVID-19 on nasal disorders were collected in Iraq, and assessed the quality of life of post-Covid patients. This study included ages ranging from 20 to 65, and most of the cases included an average age between 35-44 and 45-54.

According to BMI, many studies on the weight factor may increase the risk of corona because corona affects psychological factors such as diabetes, pressure, high blood pressure, and others. The results included between 24 and 35, which varied in 14 (35%) for patients and 18 (30%) for controls with a P-value of 0.042.

Covid-19 affected men more than women as a result of the causes and associated diseases, which included Arterial Hypertension, Diabetes, and heart disease, where the match rate between patients and controls was between 14 (35%) and 21 (35%) in Diabetes symptoms, but in heart disease, it varied between 16 (40%) for patients and 22 (36.67%) for control with a P value of 0.039 as a result of several causes, most of which are smoking and alcohol factors.

Smoking and alcohol included most of the percentages in their effect on the bronchi, which made the percentages of smoking and alcohol in patients much higher than the control, as it included 28 (70%) for smokers for patients and 24 (40%) for control, while for non-smokers 12 (30%) for patients and 36 (60%) for control. As for alcohol, the proportions of patients were included in 12 (30%) of the infected and 15 (25%) of the control affected by alcohol, while 28 (70%) of the patients and control 45 (75%) of those who did not drink alcohol.

In addition, symptoms associated with the patient resulting from Covid-19, Epistaxis, and Nasal obstruction affected the most cases among 10 (25%) for patients and 16 (26.67%) for Epistaxis but 10 (25%) for patients and 11 (18.33%) to control.

Besides olfactory disorders, patients and control were affected in the presbyosmi factor, of which olfactory complications were 9 (22%) for patients but 11 (18.33%) with 0.0392 affecting the patient quality of life.

In the case of quality of life, this study presented factors, some of which are psychological and others that affect the quality of life of the patient, including Anxiety, Depression, Effectiveness, Breathing, and Sleep. For patients and 3.1 ± 2.6 for control as a result of the previous reasons presented by previous English and

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French studies that the smoking and alcohol factor increases stress, which affects most of the young ages with nasal disorders after a corona.
Convincing studies were presented by Reslon and Jarlson that the smoking and alcohol factor may affect the patient's breathing, which destroys the bronchi, as it is unknown that corona infection is effective and possible for nasal strikes, which makes the patient feel suffocated. **[18]**
Simon and Elysin presented that the factor of diabetes and high blood pressure increases the speed of the heart rate that affects the blood vessels, which affects the patient's immune system and affects patients as a result of the aforementioned nasal disorders. **[19]**

Conclusion

The development of olfactory dysfunction occurred predominantly and suddenly with other general clinical symptoms. Anosmia was the most prevalent functional impairment, progressing with a greater day rate with olfactory disturbances when compared with patients with other types of olfactory impairment.
Participants who used oral or topical medications had no difference in their progression. Patients with olfactory dysfunction demonstrated by qualitative studies with essences usually have structural changes and inflammation in the nose.
Nasal disorders were affected in most patient samples more than control samples in most cases, as it causes respiratory distress and the immune system. In addition, the obesity factor dominated patient samples to a large extent and is more than control, which affects the immune system. All of these reasons may increase the complications and disorders of the patient's nose after corona for patients' samples more than control. **[20]**

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