



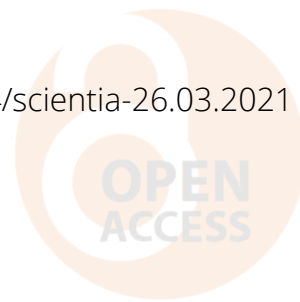
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CHARACTERISTICS AND FEATURES**
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OLFACTORY AND GUSTATORY SENSE IMPAIRMENT IN COVID-19 PATIENTS: PREVALENCE, SYMPTOM DURATION, RELATION TO SMOKING, ALCOHOL CONSUMPTION AND MOOD DISORDERS

Introduction. Impairment of olfactory and gustatory senses are common symptoms of COVID-19 disease, caused by SARS-CoV-2. In most cases, they are reversible and are negatively related to disease severity, exact cause is still under question.

Aim. Study the prevalence of olfactory and gustatory disorders in COVID-19 patients, their duration, characteristics in specific patients, symptoms relation to disease severity, relation of alcohol consumption, smoking to disease course and symptoms and mood disorders triggered by the infection.

Methods and materials. The study is retrospective, cross-sectional, 222 COVID-19 patients, ages 16-26, all students of various universities and colleges in Lviv, Ukraine completed a questionnaire, stating their age, gender, disease severity, listing symptoms, their duration and character, answering questions regarding smoking, alcohol intake and mood state. Questions regarding mood disorders screening are taken from American Academy of Family Physicians recommendations. Frequency of alcohol consumption was measured in the amount of standard alcohol doses (SAD) (10 grams of ethanol) consumed weekly, smoking by the amount of cigarettes smoked daily. Correlation coefficient (r) and standard error (S_r) were calculated using standard formula.

Results. Of all 222 patients, 73.6% reported mild, 24.9% moderate, 1.4% severe disease course. 89.1% of patients were treated at home, 10.9% in a hospital. Most reported symptoms were fatigue (84.2%), smell loss (77%) taste loss (60%), headaches (57%), fever (56.1%) and myalgia (55.7%) making them most common. Other symptoms were coryza (43%), cough (41.6%), sore throat (35.3%), breathing difficulty (31.2%), vertigo (26.2%), anxiety (26%), photophobia (25.8%), chest pain (24%), insomnia (23.1%). Diarrhea (14%), hair loss (12.2%), memory impairment (11.8%), tinnitus (7.7%) were least common. 3.6% of patients reported no symptoms.

A total of 171 patients had olfactory disorders. Full olfactory recovery appeared in 70.2% of patients, 25.7% recovered it partially, 4.1% have not recovered yet. Most patients lost their smell for a few days, one week and one month - 19.8% each, 18% for 2 weeks, 11.6% for 3 weeks, 7% for 2 months, 2.9% for 3 months, 1.2% for 6 months. Commonly patients reported distorted smell of coffee, oranges, meat, onions, eggs, milk, cigarettes.

A total of 133 patients had gustatory disorders. 87.7% reported full, 10.1% partial and 2.2% no recovery. 26.9% lost their taste for a few days, 22.3% for a week, 17.7% for 2 weeks, 13.1% for 3 weeks, 16.2% for 1 month, 3.8% for 2 months. Commonly patients reported distorted taste of coffee, fish, tea, candies, oranges, onions, meat. Loss of smell and taste were reported by 74.8% and 57% of patients with mild disease, 83.3% and 66.7% of patients with moderate disease. All

patients with severe disease lost smell and taste sensations. Smell and taste impairment was most common among patients 23-26 y.o. (83.8% and 64.9% respectively), less common among groups 20-22 y.o. (69.7% and 59.6%), 16-19 y.o. (78.4% and 50.9%). Positive moderate correlation was found between age and anosmia ($r=0.379$, $Sr=0.144$), positive strong correlation between age and dysgeusia ($r=0.990$, $Sr=0.023$).

Among patients with mild disease course 43.5% lost smell sensations for one week or less, 27.4% for 2-3 weeks, 28.2% for 1-2 months, 0.8% for 3 months. Among patients with moderate disease course 28.9% experienced anosmia for one week or less, 31.1% for 2-3 weeks, 26.7% for 1-2 months, 8.9% for 3 months, 4.4% for 6 months and longer. Among patients with severe disease course three patients had anosmia for a few days, 2 weeks and 1 month respectively. Moderate negative correlation was found between disease severity and anosmia duration less than 3 weeks ($r=0.395$, $Sr=0.051$), positive moderate correlation between disease severity and anosmia duration more than 3 weeks ($r=0.569$, $Sr=0.063$).

Total of 14 patients stated they consumed more than 3 SAD per week, 78.6% of them had mild disease, 21.4% had moderate disease course. 22.5% of patients diminished or discontinued their alcohol intake as a result of COVID-19 infection. 14.3% of patients who consumed 3-5 SAD per week, experienced anosmia for 1 week, 28.6% for 2 weeks, 14.3% for 3 weeks, 42.9% for 1 month. Three patients, who consumed 5-10 SAD per week experienced anosmia for a few days, 3 months and 6 months respectively. Patients who consumed more than 10 SAD per week did not experience smell disturbances. Positive strong correlation was found between the amount of consumed alcohol and anosmia duration ($r=0.990$, $Sr=0.034$).

Total of 28 patients were active smokers, 78.6% had mild, 17.6% had moderate, 3.8% had severe disease course. 34.1% of smokers quit or started smoking less due to disease, 2.3% started smoking more. 6.7% of patients who smoked less than 10 cigarettes a day experienced anosmia for a few days, 26.4% for 1 week, 13.2% for 2 weeks, 13.2% for 3 weeks, 19.8% for 1 month, 13.2% for 2 months, 6.6% for 3 months, 6.6% for 6 months. 33.3% of patients who smoked 10-20 cigarettes a day, experienced anosmia for a few days, 16.7% for 1 week, 33.3% for 2 weeks, 16.7% for 1 month. Patients who smoked more than 20 cigarettes a day did not experience anosmia. Negative strong correlation was found between the amount of cigarettes smoked and anosmia duration ($r=0.990$, $Sr=0.078$).

Mood disorders were reported by 34% of patients. 15% of patients with mood disorders had harmful habits.

Conclusion. Most young patients experienced mild course of COVID-19 infection. Predominant symptoms were fatigue, anosmia, dysgeusia, headaches, fever, myalgia. Positive correlation was found between age and anosmia/dysgeusia duration, between disease severity and anosmia duration more than 3 weeks, between alcohol abuse and anosmia duration. Negative correlation found between smoking and anosmia duration, which need further investigation.

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