The Effect of smoking on infection with covid-19

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بِسْمِ اللَّـهِ الرَّحْمَـٰنِ الرَّحِيمِ

(إِنَّكَ لَا تَهْدِي مَنْ أَحْبَبْتَ وَلَٰكِنَّ اللَّهَ يَهْدِي مَن يَشَاءُ ۚ وَهُوَ أَعْلَمُ بِالْمُهْتَدِينَ)

صَدَقَ اللهُ الَعلِيُّ الَعَظِيم

[القصص:٥٦]

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DEDICATION

We dedicated this search to the Almighty God, thank you for the guidance, strength, power of mind, protection and skills and for giving us a healthy life. All of these, we offer to you

This study is also wholeheartedly dedicated to our beloved parents, who have been our source of inspiration and gave us strength when we thought of giving up, who continually provide their moral, spiritual, emotional, and financial support.

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ABSTRACT

Background: Smoking has a significant role in weakening the pulmonary immune system function. Infection with infectious agents can cause more serious outcomes in the pulmonary system among people who smoke than those who do not.

Objectives: To show the relationship between smoking and the progression of the infectious COVID-19.

Materials and Methods: A questionnaire the following data was gathered from both sexes using a Google form: age, smoking status, smoking habits, and medical conditions.

Results: Statistical analysis indicated that there are highly significant differences between males and females, and older patients included in the study who are infected and non-infected with COVID-19 . In regard to smoking status, there are highly significant differences in the disease severity between the never-smoking group compared to current smokers , respectively. This differences increase with the number of times of smoking. Statistical analysis indicated that there are highly significant differences in the disease severity in the male and female groups who have not smoked compared to former smokers .

Conclusions: Recent studies have reported the real role of the virus in the health status of smokers. However, this study showed no strong relationship between the virus and smokers.

Keywords: COVID-19, Smoker, Shisha, (e-cigarettes), Cigar

INTRODUCTION

The coronavirus pandemic began in December 2019 and has rapidly spread globally [1].

 The causative agent of this disease is SARS-CoV- 2, which belongs to the subgenus Sarbecovirus (Beta-CoV lineage B), which has a significant role in the development of the respiratory tract symptoms by attachment to the ACE2 receptors which are found in the alveolar epithelial cells, the symptoms varying from an infection without symptoms to a serious case of acute respiratory distress syndrome (ARDS) [2].

Corona viruses have spike proteins which facilitate entry into the alveolar epithelial cells [3].

Smoking and vaping increase the risk and severity of pulmonary infections because of damage to upper airways and a decrease in pulmonary immune function by causing cytokine release, which leads to increased mucoid secretion, reduced mucociliary clearance, and finally causes damage to the epithelial wall [4].

Shisha is a method of smoking tobacco invented in the 16th century by a physician named Hakim Abul-Fath Gilani. The purpose of the device was to pass smoke through water in an attempt to 'purify' the smoke, an unproven concept that has been repeatedly questioned by the medical community [5].

As a result, the smoke contains components from both tobacco and coal. These include polycyclic aromatic hydrocarbons (PAH),volatile aldehydes, CO, nitric oxide (NO), Nicotine, furans, and nanoparticles [6].

Nicotine levels increase significantly from 2 to 6 ng/ml after smoking shisha for five minutes. Increasing nicotine levels have been shown to induce increases in heart rate and may contribute to various cardiovascular diseases [7].

The COVID-19 virus affects the lungs in similar ways to other respiratory illnesses. One of the added complications of this infection is that as symptoms advance, they can quickly develop into acute respiratory distress. Smoking can increase the likelihood of this complication and can sometimes even be the cause of exposure.When COVID-19 enters the nasal or oral passageways, it makes its way into the lungs, where it binds

to the cells,attaching to their surface structures via proteins. While infected, the cells in the lung tissues have an inability to process oxygen properly. This can often lead to the need for medical intervention, such as a ventilator, to assist with breathing. You need to support physiological functioning within the lungs, the respiratory process, essentially. If that process continues and those tissues break down, then you develop a toxicity within the blood. [8]

This compromises the ability for blood to carry oxygen, not only throughout the lungs, but to other organs and tissues within the body, eventually leading to organ or multi-organ-system failure.While the repeat hand-to-mouth exposure of smoking inhibiting lung function.There are cilia that line the internal linings of the lung tissue, and those cilia help to move waste and debris out of the lungs.[9]

When you smoke or ingest things other than clean air, those cilia have essentially, become stunned, and they're not able to function properly. Smoking creates a chain reaction across the body that can negatively impact your ability to fight respiratory illnesses. [10]

Quitting allows for proper lung function and optimal oxygenation of all the tissues within the body to return.wants to return back to normal to the extent to which it can return back to baseline normal,so does cognitive function, so does organ function, skin tone. [11]

There are a number of optimal outcomes for stopping smoking, but the immediate improvements on lung health can increase body's ability to fight a respiratory illness.[12]

The purpose of this study is to summarize the key points that the smoking that may be a risk factor for COVID-19, as well as the data from observational studies and reviews on the connections between smoking history and COVID-19.[13]

MATERIALS & METHODS

We conducted a prospective study of 222 Iraqi recovered patients with a COVID-19 infection and smoking . A google form questionnaire was performed to collect a required data that included gender of the patients, age, presence of chronic disease, date of infection, symptoms and complications other additional information and after COVID-19 viral infection in recovered patients. Taken in consideration this study was had important methodological limitations, it focuses on patients in specified areas and age groups.

RESULTS

This study was conducted in (222). The socio-demographic characteristic of the study population of (222) was presented In **Table (1)** There are highly significant differences between age groups (15 - 35, 35 - 45) compared with age groups (45 - 65) respectively. In regard to comorbidities, there were Highly significant differences among All groups that were infected and non-infected with COVID-19.

In **Table (3)** shows COVID-19 severity in the ever-smokers . More severe and critical cases were ever-smokers, at 10.8% , moderate at 48.2% and mild at 41%. Found 61.7% seek for medical help while 38.3% no need for it.

DISCUSSION

This result provides evidence that smoking fuels the progression of COVID-19 severity , shows that ever-smokers are at higher risk of having critical condition than never-smokers and also show that smokers with a longer active smoking history are more prone to developing the severe and critical stages of COVID-19.

Some factor such as, age, gender, educational status, ethnicity, marital status, residential type, and occupation were significantly associated with COVID-19 severity .[14]

Fig.1 These results found that females are less likely than males to be in critical and severe COVID states because to their predisposition to smoking. Males are more likely than females to be ever-smokers, which increases their odds of having more smoking related diseases, contributing to the severe and critical levels of the patients .[15]

Table1 In regard to the age group, this study showed highly significant differences between age groups and those whose comorbidities ranged between (15-25, 26-35) compared with age groups 36-45 so that is aged more than 35 years suffered from a more severe state than people below this age . According to the age groups, previous studies showed that about fifty percent of the infected patients ranged in age from 20-50 years. Those over the age of 80 years noted that the disease gradually decreases until it reaches about 1 percent. This may explain why adult males spend a long time exposing themselves to the threat of infection.

In the question of work place show adults are exposed at their workplace, during transportation, or at other gatherings, as they are the main earners in their families.

In marital status have shown that smoking, which has a positive association with COVID-19 severity, has an increased rate among never-married people, probably as a result of several stress issues. Smoking is clearly related to the severity of COVID-19, and is one of the important risk factors for the worsening of COVID-19 and poor prognosis.

According to education level more severe cases are found among highly educated people than among people with lower levels of education. This is

probably due to lifestyle and occupation, which are correlated with education .[16]

Table2 percent of smoker is (29.7%) compared to non-smokers (70.3%). People say that they use smoking for many different reasons—like stress relief, pleasure, or in social situations may be this is considered as a reason to smoke.[17]

Fig2 In question of (If you smoke how many packs of cigarettes per day) :- In general, a light smoker is someone who smokes less than 10 cigarettes per day. Someone who smokes a pack a day or more is a heavy smoker. An average smoker falls in between. In our questionnaire, which was filled out by 222 people, 65 of them smoked one packet per day, 22 of them smoked 2-3 packets per day, two of them smoked 4 to 5 packets per day, and others smoked more than 5 packets per day.[18]

Fig3 In question of (How long Is smoking) :- Recent available data indicate that individuals with a smoking history are more likely to acquire more severe COVID-19 outcomes, including intensive care unit admission and In-hospital mortality, than non-smokers. Moreover, research findings also indicate that smokers exhibit increased expression ACE-II receptors, which acts as a binding site for COVID-19 . Where In our results smokers for years numbered 64 (68.1%) among the smokers registered in the questionnaire . [19]

Table3 In question of (did you receive the vaccine) Some studies described a link between active smoking and lower levels of vaccine-induced antibodies , or increased odds of low-avidity immunoglobulins G (IgG) in smokers . In contrast, another study on influenza vaccination suggested that smoking does not interfere with the quantity of vaccine-induced antibodies. However, while the effect of cigarette smoking on the humoral response after immunization is generally accepted, the current evidence does not seem to be reliable enough to draw firm conclusions or to generate a consensus, likely due to differences according to vaccine types or in study populations for instance, in terms of age, comorbidities, and smoking exposure across the studies. Only limited specific information is available about seroconversion after COVID-19 vaccination in smokers.

In question of (How would you rate your infection with covid–19) Increased age has been reported to be a factor for COVID-19 severe

outcomes. In our results we find that those aged under 20 years are roughly half as susceptible to infection as those over 20 years of age, and that 41% of infections are asymptomatic or paucisymptomatic in 15 to 19 year olds, compared with 10.8% in those over 55 years of age and 107(48.2%) within 222 had a moderate severity of infection, with take in consideration that most of those who filled out the questionnaire were from the young age groups. That mean the distribution of confirmed COVID-19 cases has shown strong age dependence, with notably few cases in children. This could be because younger ages are less susceptible to infection and/or are less prone to showing clinical symptoms when infected.In question of (Did you need to seek medical help) a higher percentage of hospitalizations and death for severe COVID-19 in former smokers compared to never smokers is intriguing. The risks of smoking-related disease result largely from cumulative damage; hence, the consequences of smoking occur disproportionately among the elderly. [20] while(Clinical characteristics of 140 patients infected with SARS-CoV-2 in Wuhan, China) is corresponds to our research.[21]

According to what we obtained from our research, we found that(Journal Article:-The Paradox of the Low Prevalence of Current Smokers Among COVID-19 Patients Hospitalized in Nonintensive Care Wards: Results From an Italian Multicenter Case–Control Study) do not corresponds to our research. [22]

CONCLUSION

At the time of this review, the available evidence suggests that smoking is associated with increased severity of disease and death in hospitalized COVID-19 patients.

Although likely related to severity, there is no evidence to quantify the risk to smokers of hospitalization with COVID-19. Population-based studies are needed to address these questions.

RECOMMENDATIONS

➤ People who have recovered from COVID-19 should be more careful in maintaining and monitoring their health status. They have to be in regular monitoring for their outlook complications that may take place after their recovery. Those recovered patients are recommended to get CT-scan, and Magnetic resonance imaging (MRI) scans and University of Pennsylvania Smell Identification Test (UPSIT) to test smell identification, as loss of smell is one of the premier symptoms of neuroinvasion in COVID-19 patients.

➤ The one health connotation stresses the ecological relevance between human, animal, and environmental health. Understanding the importance of microbiome relevance between the environment-humans-animals opens up the potential for innovative and integrated approaches to diagnosis treatment, and intervention of diseases to animals and humans.

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