

Association of age, sex, smoking, and blood groups with COVID-19 infection and prevalence of long-term COVID syndrome among survivors who used steroids

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Abstract

Background: Identification of risk factor of COVID-19 infection is essential for managing healthcare plans. most of long covid symptoms reported after first pandemic wave and many patients who hospitalize or not, they were suffer from long covid syndrome. This study aimed to investigate association of age, sex, smoking and blood groups with covid 19 infection and to estimate the prevalence of persistent symptoms and signs of covid 19 at least 4 weeks among survivors and see how steroid management related to presence of long covid symptoms among these patients.

Methods: This is cross sectional study; data were collected in Balsam Alwatan Medical Center in Zawia city - Libya. 36 patients were covid 19 positive confirmed cases from 215 patients whose age was 18 years or older. They visited medical OPD screened by questionnaire. They answered it during the visit to medical OPD.,8 patients who experience long covid symptoms after 4 weeks from onset of covid 19 infection, and thus data of 36 patients were analysed. **Result:** After screening 215 patients in medical opd a total of 36 were infected with covid 19. The most common reported symptoms were fatigue 72%, loss of smell and taste 47.2%, dyspnea 30.5%, headache 19.4% and depression 0.02% of the patients. 11.1% of patients admitted in to isolation center and 27.7% of them needed oxygen therapy. 8 patients with symptoms more than 4 weeks from acute infection about 22.2% considered as long covid. **Conclusions:** The result showed insignificance association between age, sex, smoking and blood group and covid 19 infection in this study, no significance association between using steroid in the management and presence of long covid symptoms among these patients.

Keywords: COVID-19, Risk factor, Long COVID, Steroid

Introduction

Coronavirus disease 2019 (COVID-19) disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Goërtz et al 2020). a Globally, as of March 7, 2022, the disease has caused 440,807,756 confirmed cases, including 5,978,096 deaths. In Libya, as of March 7, 2022, the cumulative cases reached 497,958 with 6,299 deaths according to the National Centre for Disease Control of Libya) (bshaena et al,2022). Identification of predictor of covid 19 infection is essential for management of health care of patient (Notarte et al 2022) the factor for many disease which has been studied for many

epidemiological data (Statsenko et al 2022) since covid 19 outbreak many researched that hypothesize that difference in infection of covid of population linked to age structure of that population for many factors, such as reducing compliance with social distance in younger adult may impact the age specific rate of morbidity and mortality (Dudley – lee et al 2020), most of another research suggested that age is risk factor for long covid syndrome(Notarte et al 2022). The sex is another important risk factor for association with covid infection many studies reveals negative association of sex to get infection with covid. On other hand female more predictive to get long covid syndrome and male more linked to severity of disease (Notarte et al 2022). Also, the smoking is other risk factor, many covid studies reported that smoker less suitable to infection but once they infected severe disease was reported (paleiron et al 2021), another risk factor is the blood groups also studied in covid 19 outbreak, several studies have linked the susceptibility of the disease with blood groups (Berger 1989). A potential mechanism is the presence of receptors (induced by the ABO blood group system antigens) on host cells' surfaces, which could increase or decrease the ability of virus spikes to attach to the target host cells (silva et al 2020). The National Institute for Health and Care Excellence (NICE) guideline has coined the term 'long-COVID' for symptoms persistent beyond 4 weeks from acute COVID-19 infection (Goel et al 2022). The persistent of signs and symptoms of acute infection beyond 4 weeks as fatigue, breathlessness, cognitive impairment and depression may know as long covid syndrome by health organization, which symptoms varies from mild to severe attack that treated with steroid from onset of attack.

This study aims to study the association of age, sex, smoking and blood group with infection with covid 19 also provide prevalence of long covid among survivor used steroids.

Materials and methods

The data collected from Balsam Alwatan center Zawia Libya during patients visit to the medical OPD. Patients who attended the center from April 1 2021 to June 30 2021. All positive patients were confirmed as covid cases through real-time polymer-ase chain reaction (PCR). The real-time PCR analysis was performed in the COVID-19 laboratory in Zawia city. The patients answered the questionnaire in front of medical doctor at the begging of visit, the questionnaire was included age, sex, smoking, blood group, chronic illness, infection with covid, when get infection, what are

the symptoms and their duration, did you have symptoms at the visit, place of management, what's are the management, did you need oxygen?, general condition at time of seeking medical advice, did you vaccinated or not? infection with covid when symptoms started, hospitalization, treatment with multivitamin and steroid.

the total number of cases is 215. 36 patients have infection with covid 19 and 8 patients get long covid after 4 weeks from onset of infection.

DATA ANALYSIS

study the association of age ,sex,smoking and blood groups with covid 19 infection. the prevalence of long covid syndrome among 36 patients whose infected with covid 19 and steroid using where described by using descriptive statistics, and a χ^2 test was used to highlight any statistically significant variables, where $p < .05$. data analysis was undertaken using spss computer software for windows (version 23; spss) and using the microsoft office excel 2016 program.

RESULT

the objective of study to identify the risk factors associated with covid 19 infection such age, sex, smoking, and blood group and study of prevalence of long covid 19 among patients used steroid.

after screening 215 patients in medical opd a total of 36 were infected with covid 19. the most common reported symptoms were fatigue 72%, loss of smell and taste 47.2%, dyspnea 30.5%, headache 19.4%, depression 0.02% and 11.1% of patients admitted into isolation center and 27.7% of them needed oxygen therapy (fig 2). 8 patients continued to have some symptoms such as dyspnea and fatigue for more than 4 weeks from acute infection, which formed about 22.2% of total and considered as a long covid patients (fig1 and table1)

Table 1

Long COVID	Count	%
No	28	77.8%
Yes	8	22.2%
Total	36	100%

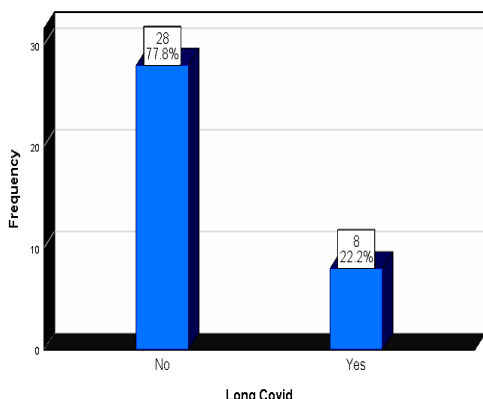


Fig 1

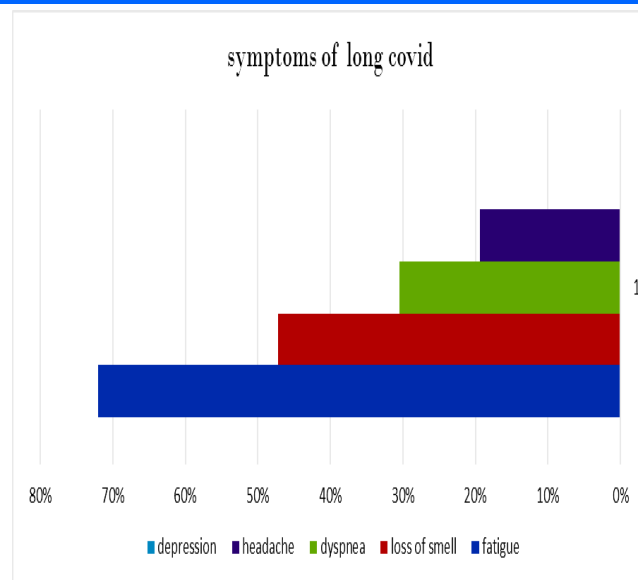


Fig 2

The association of some risk factors with covid 19 infection:

1- Association between COVID and age group:

Table (2)

Age Group	COVID				Chi Square	P-value
	Yes		No			
	Count	%	Count	%		
15-29	6	16.6%	55	30%	3.93	0.268
30-44	17	47.2%	62	34.6%		
45-59	7	19.4%	40	22.3%		
>=60	6	16.6%	22	12.2%		
Total	36	100%	179	100%		

Table (2) shows that 16.6% of studied sample the patient which aged 15-29 had infection with COVID, while 30% of them were not infected. Also, 47.2% of the studied sample aged 30-44 had infection with COVID, while 34.6% of the same age revealed no COVID. Table (2) also shows that 19.4% of the patients aged 45-59 had infection with COVID, while 22.3% of the patients of same age had no COVID. In addition, 16.6% of the patients aged >=60 had COVID, while 12.2 of them had no infection with COVID. Chi square test for association between COVID and age group equal to 3.93 with p-value = 0.268 > 0.05 which indicate that there is no significant association between COVID infection and age group.

2- Association between COVID and Sex:

Table (3)

Sex	COVID				Chi Square	P-value
	NO		Yes			
	Count	%	Count	%		
Female	115	53.5%	28	13.0%	2.464	0.116
Male	64	29.8%	8	3.7%		
Total	178	82.8%	36	16.7%		

Table (3) shows that 53.5% of the studied sample were females and have no COVID, while 13.0% of them were females and have COVID. Table (3) also shows that 29.8% of the studied sample are males and had no COVID, while 3.7% of the sample studied were males and had COVID. Chi square test for association between COVID and Sex equal to 2.464 with p-value = 0.116 > 0.05 which indicate that there is no significant association between COVID and sex.

3- Association between COVID and blood group:

Table (4)

Blood Group	COVID				Chi Square	P-value
	NO		Yes			
	Count	%	Count	%		
O	84	39.1%	15	7.0%	3.145	0.370
A	69	32.1%	16	7.4%		
B	20	9.3%	2	0.9%		
AB	6	2.8%	3	1.4%		
Total	179	83.3%	36	16.7%		

Table (4) shows that 39.1% of the patient were an O group with no COVID, while 7.0% of them were an O with COVID. Also, 32.1% of the patients were an A group with no COVID, while 7.4% of them were an A group with COVID. Table (4) also shows that 9.3% of patients were B group with no COVID, while 0.9% of them were B group infected with COVID. In addition, 2.8% of the patients were an AB group with no COVID, while 1.4% of them were an AB group with COVID. Chi square test for association between COVID and blood group equal to 3.145 with p-value = 0.370 > 0.05 which indicate that

there is no significant association between COVID and blood group.

4- Association between COVID and smoking:

Table (5)

Smoking	COVID				Chi Square	P-value
	NO		Yes			
	Count	%	Count	%		
NO	151	70.2%	34	15.8%	2.540	0.111
Yes	28	13.0%	2	0.9%		
Total	179	83.3%	36	16.7%		

Table (5) shows that 70.2% of the studied sample are not smoking and have no COVID, while 15.8% of them were have no history of smoking and they had COVID. Table (5) also shows that 13.0% of the studied sample were have history of smoking and have no COVID, while 0.9% of the studied sample were have smoking and they had COVID. Chi square test for association between COVID and smoking equal to 2.540 with p-value = 0.111 > 0.05 which indicate that there is no significant association between COVID and smoking.

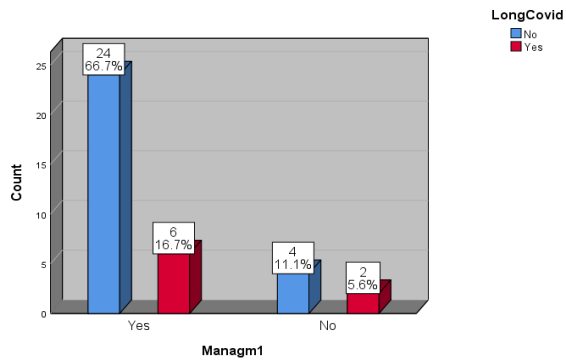
5- Association between long COVID and using of steroids in the management with steroids:

Table (6)

Managm	Long COVID				Chi Square	P-value
	Yes		No			
	Count	%	Count	%		
Yes	6	16.7%	24	66.7%	0.514	0.473
No	2	5.6%	4	11.1%		
Total	8	22.2%	28	77.8%		

Table (6) shows that 16.7% of the patients have used steroid and have long COVID, while 66.7% of the sample study have used steroid and have no COVID. Table (6) also shows that 5.6% of the sample study have not used steroid and have COVID, while 11.1% of the sample study have not used steroid and have no COVID. Chi square test for association between long COVID and having steroid equal to 0.514 with p-value = 0.473 > 0.05 which indicate that there is no significant association between COVID and steroid management.

Fig(2): Association between the using of steroids and long covid



Discussion

The study investigated the association of risk factors with covid 19 infection, across sectional doctor administrated questionnaire survey was conducted with patients which visited balsam Alwatan hospital in Zawia Libya. 215 patients were answered the questionnaire. So; the data were analyzed.

According to the result 36 patients get infection with covid 19, they had different symptoms. The most age group affected was 30-44yrs about 47.3%, Chi square test for association between COVID and age group equal to 3.93 with p-value = 0.268 > 0.05 which indicate that there is no significant association between COVID and age group. But from previous research showing that age is appears to be a strong risk factor for COVID-19 severity and outcomes (Statsenko et al 2022). Also, In this study found 13% female infected with covid and 3.7% were male, Chi square test for association between COVID and Sex equal to 2.464 with p-value = 0.116 > 0.05 which indicate that there is no significant association between COVID and the sex. but another researches pointed that long covid is twice common in female than in male (Nabavi et al 2020).

Also the study revealed that. 0.9 % of infected patients were smokers and 15.8% nonsmoker, Chi square test for association between COVID and smoking equal to 2.540 with p-value = 0.111 > 0.05 which indicate that there is no significant association between COVID and smoking. The findings were consistent to previous studies that showed no significant association between the smoking and infection with covid but most likely increase severity of disease (Guan et al 2020)

In addition, this study revealed that the most blood group affected was group A by 7.4% from covid 19 infected patients, Chi square test for association between COVID and blood group equal to 3.145 with p-value = 0.370 > 0.05 which indicate that there is no significant association between COVID and blood group.

The percentage of patients which develop long covid was 22.2%, this group of patients were describe symptoms beyond 4-week e.g fatigue, breathlessness gastrointestinal symptoms and depression. 16.7% from long covid patients were used steroid in the management of covid infection. Chi square test for association between long COVID and having steroid equal to 0.514 with p-value = 0.473 > 0.05

which indicate that there is no significant association between COVID and steroid management.

There is some limitation in this study which sample size may not sufficient to conclude about association of risk factor with covid infection because time of study was at end of first wave of covid pandemic in Libya and also this study not able to evaluate the duration of individual symptoms, despite this limitation, this study identified long covid syndrome 22.2% of all covid cases and demonstrate that covid 19 may have potential effect on local community

Conclusion

Among laboratory confirmed cases of COVID-19, age, sex, smoking, and blood group all of these risk factors studied in infected patient and had insignificant association with covid 19 and 22.2% of long covid syndrome not correlated with steroid management from onset of attack. Our result warrant continuous follow up of long covid cases.

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