

Original Research Article

Tobacco, alcohol use and underlying comorbidities in symptomatic COVID-19 cases versus asymptomatic COVID-19 cases: a case control study in Mumbai city

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ABSTRACT

Background: Coronavirus disease-2019 belonging to Corona virus family, was first reported in Wuhan, China in November 2019 which is an ongoing Pandemic. The apparent vulnerable group more susceptible to the symptomatic infection are the elderly population, tobacco and alcohol users and people having underlying comorbid conditions.

Methods: An unmatched case-control study was conducted in March 2021 through purposive sampling amongst the Covid-19 infected population. The socio-demographic details, use of tobacco, alcohol and underlying comorbid conditions were studied to show the association with symptomatic Covid-19 infection, in the population more than 18 years of age in Mumbai City.

Results: Out of the total 528 Covid-19 infected individuals, 38.8% were symptomatic and 61.2% were asymptomatic. The elderly population and the underlying comorbid conditions were not found to be associated with symptomatic Covid-19 infection. Alcohol consumption (OR 0.87 (95% CI -0.39, 1.92)), and both alcohol consumption and smoking (OR 0.94[95% CI 0.45, 1.97) association with symptomatic Covid-19 infection were found to be insignificant at 95% CI in the present study whereas significant negative association was observed in smoking (OR 0.21 (95% CI 0.08, 0.53)) with symptomatic covid-19 infection.

Conclusions: Covid-19, addiction and the non-communicable diseases together is a major public health concern in India. Since no significant association was found, study on other unknown factors like the genetics, race, ongoing treatment for underlying comorbid disease and other should be conducted to understand the actual risk factors of the novel disease.

Keywords: Alcohol, Co-morbidities, COVID-19, Tobacco

INTRODUCTION

SARS-CoV-2, a novel disease outbreak that started in Wuhan, China, in November 2019, and since then, coronavirus disease-2019 (COVID-19), has become a pandemic.¹ This sickness has taken an unprecedented toll on the environment and humankind. From the common cold to more serious conditions like severe acute respiratory syndrome (SARS) and Middle East Respiratory Syndrome (MERS) a number of coronaviruses are known to cause respiratory infections.

The majority of COVID-19 virus victims show no symptoms. Some individuals get mild to moderate respiratory illnesses and get cured on their own.² Some people experience severe illness and breathing problems. Patients admitted to various hospitals served as subjects to study the COVID-19 disease risk factors.³ Age greater than 60 has been identified as a risk factor for severe disease so far. Over 65-year-olds accounted for more than 81% of COVID-19 deaths. Deaths among those over 65 are eighty times more common than those among those between the ages of 18 and 29.⁴ Comorbidities are to

responsible for more than 70% of incidents. As a person's number of underlying medical conditions rises, such as non-communicable diseases like diabetes, hypertension, cardiac disease, chronic lung disease, cerebrovascular disease, chronic kidney disease, immunosuppression, and cancer, the risk of developing severe COVID-19 increases.⁵⁻⁸ These conditions have also been linked to higher mortality. Social injustices and persistent systemic diseases have elevated the likelihood of disease for a number of different community members.⁹

Social injustices and long-standing systemic illnesses have increased the risk of COVID-19 for a number of community members, including many members of specific racial and ethnic minorities and those with disabilities.¹⁰ However, there is currently little information on whether substance addiction of any kind is also regarded as a risk factor.¹¹ Understanding the risk factors for developing a severe COVID-19 illness is crucial because it can guide people in adopting preventative measures while they go about their everyday life and attend events.¹² By reducing the risk factors, one can lessen the likelihood of developing a severe COVID-19 disease and better anticipate medical treatment.

Further research is necessary to better understand the risk factors for severe disease or complications because COVID-19 is a new disease.¹³ Age, race/ethnicity, gender, some medical problems, use of specific drugs, poverty and crowded living situations, particular vocations, pregnancy, and other characteristics have all been recognised as potential risk factors. If these are risk factors for developing a severe COVID-19 illness, further study will be necessary to validate this and to identify any additional risk variables.¹⁴ The objective was to study the sociodemographic factors of COVID-19 infected cases. To determine the association of age (>60years), underlying comorbidities and use of tobacco and alcohol with symptomatic COVID-19 infected cases.

METHODS

The study was conducted in Mumbai city, Conducted after the end of second wave of COVID-19 Pandemic

(March 21- June 21). Study was designed as retrospective unmatched case-control study. Study variables like the socio-demographic details, underlying comorbid conditions (CVD, Diabetes, Lung, Kidney and Liver Diseases) and use of tobacco (current users in any form—ST, SLT) and alcohol were included in the study amongst population more than 18 years of age in Mumbai City.

Data was collected by a questionnaire which was designed in google form for extracting all relevant information and circulated to the people from Mumbai city who were infected with COVID-19 infection during second wave. Those who received and voluntarily filled the form indicated implied consent were considered eligible. Total 528 COVID-19 cases were taken as study sample.

Definition of cases and control

Purposive non-probability sampling amongst the COVID-19 infected population was considered. The COVID-19 infected cases with at least one symptom were considered as symptomatic COVID-19 cases and were enrolled as 'case' and the rest COVID-19 infected cases without any symptoms were considered asymptomatic cases, enrolled as 'control'.

Data was entered in MS-Excel sheet, data was analyzed using appropriate statistical software i.e., MS-Excel. Categorical variables related to risk factors were tabulated, odds ratios (ORs) and p-value were calculated, $p < 0.05$ was considered as statistically significant. Analysis was done separately for symptomatic vs asymptomatic COVID-19 infected cases for the risk factors like age, underlying comorbid conditions and use of tobacco and alcohol.

RESULTS

In Table 1, out of the 528 COVID-19 cases, 39% were symptomatic and 61% were asymptomatic cases. 49% of the cases were from the age group 18 to 44 years. 33% of the cases were from the age group 45 to 59 years and 18% from the age group more than 60 years.

Table 1: Clinical and epidemiological characteristics

	Symptomatic Case ^a (N=205)	Asymptomatic Control ^b (N=323)	Total (N=528)	Odds Ratio (OR (95% CI))	p-value
Distribution of COVID-19 cases	205 (39)	323 (61)	528 (100)	-	-
Age group distribution:					
Age 18-44 years					
Age 45-59 years	99 (19)	162 (31)	261 (49)	-	-
Age >60 years	72 (14)	100 (19)	172 (33)		
	34 (6)	61 (12)	94 (18)		
Gender distribution:					
Male	95 (18)	172 (33)	269 (51)	0.75	p>0.05
Female	110 (21)	151 (29)	261 (49)	(CI 0.53, 1.08)	

a - 'case' - symptomatic COVID-19 cases. b - 'control' - asymptomatic COVID-19 cases.

Table 2: Risk factors and its associations.

Characteristics	Symptomatic Case ^a (N=205)	Asymptomatic Control ^b (N=323)	Total (N=528)	Odds Ratio (OR (95% CI))	p-value
Distribution of COVID-19 cases	205 (39)	323 (61)	528 (100)	-	-
Age:					
Age >60	34 (6)	61 (12)	95 (18)	0.85	p>0.05
Age <60	171 (43)	262 (50)	433 (82)	(CI 0.54, 1.36)	
Underlying comorbidities:					
Comorbidities					
No Comorbidities	83 (16)	129 (24)	212 (40)	1.02	p>0.05
	122 (23)	194 (37)	316 (60)	(CI 0.72, 1.46)	
Tobacco:					
Tobacco users	5 (1)	35 (7)	40 (8)	0.021	P<0.05
(Any from- ST, SLT)				(CI 0.08, 0.53)	
Non-Tobacco users	200 (38)	288 (55)	488 (92)		
Alcohol:					
Alcohol users	10 (2)	18 (3)	28 (5)	0.87	p>0.05
Non-alcohol users	195 (37)	305 (58)	500 (95)	(CI 0.39, 1.92)	
Tobacco & Alcohol:					
Use of both	12 (2)	20 (4)	32 (6)	0.94	p>0.05
Not using both	193 (37)	303 (57)	496 (94)	(CI 0.45, 1.97)	

a - 'case' - symptomatic COVID-19 cases. b - 'control' - asymptomatic COVID-19 cases.

51% of the cases were males and 49% were females, there was no statistically significant association seen between COVID-19 cases and gender. (Table 1).

In Table 2, Age above 60 years, underlying comorbidities, alcohol users and cases using both tobacco and alcohol had no statistical association with the severity of COVID-19 cases.

Whereas, there was statistically negative association seen between tobacco consumption and severity of COVID-19 cases (Table 2).

DISCUSSION

In the study, Tobacco, alcohol use and underlying comorbidities in symptomatic COVID-19 cases vs asymptomatic COVID-19 cases – a case-control study in Mumbai city, more than half of the patients infected were asymptomatic, a similar finding was seen in the study conducted by Zheng Chen et al., where 74.8% of the cases were asymptomatic at the Long-term care facilities in Belgian (Table 1).¹⁵ Nearly half of the cases were from the age group 18 to 44 years. 51% of the cases were males and 49% were females, gender had no statistically significant association seen between asymptomatic COVID-19 cases and symptomatic COVID-19 cases. A similar finding was seen in S. Saurabh et al., where the age and gender of symptomatic and asymptomatic individuals were similarly distributed (Table 1).

In the present study age above 60 years, underlying comorbidities, had no statistical association between symptomatic COVID-19 cases and asymptomatic COVID-19 cases. A similar finding was seen in a study conducted by In our population of COVID-19 hospitalized patients aged 60 years and older, the presence of pre-existing comorbidities such as heart failure and chronic kidney disease was associated with an increased risk of hospital mortality. We also confirmed that COVID-19-related mortality increased with age. Conversely, we were not able to confirm the association of malignancy, chronic liver disease, obesity, or diabetes with in-hospital mortality but a potential increase in risk was observed. Unexpectedly, the odds ratios for dying of patients with hypertension or chronic respiratory disease were lower than one.² In contrast to the study conducted by S. Saurabh et al., adds to the evidence that older age and comorbidities increase the risk of severe COVID-19 and mortality. This contrast could have been observed as the old population could have already been deceased and since is a retrospective study, they would have been unable to fill the form (Table 2).

In the present study alcohol users and cases using both tobacco and alcohol had no statistical association between symptomatic COVID-19 cases and asymptomatic COVID-19 cases. In contrast to the study conducted by S. Saurabh et al the use of alcohol was found to be significantly associated with symptomatic COVID-19 as compared with asymptomatic SARS-CoV-2 infection. (Table 2). Whereas, there was statistically negative association seen in tobacco consumption between

symptomatic COVID-19 cases and asymptomatic COVID-19 cases, a similar finding was seen in a study conducted by S. Saurabh et al where tobacco smoking appeared to reduce the risk of symptomatic disease, while the apparently protective association (Table 2)).

Limitations

It is a purposive sampling. Selection bias may be there in the present study, since questionnaire was circulated as a google form and people only who were on social media could access it. Old age people who are not on social media would not have been able to fill the form. Also, the deceased severely symptomatic COVID-19 cases have not been able to participate. Recall bias may be there as the data was collected retrospectively. The Hawthorne effect may be there as people would hide their history tobacco and alcohol use due to social stigma.

CONCLUSION

Out of the total 528 COVID-19 infected cases, more asymptomatic cases were to be found than symptomatic. The maximum number of cases of COVID-19 infection were seen in age group from 18-44 years and males. Negative association was found between the use of tobacco with symptomatic COVID-19 cases and the difference was statistically significant. No significant association was found between age (>60yrs), underlying comorbidities, use of alcohol and both (use of tobacco and alcohol) with COVID-19 symptomatic cases. In the present study all age group, comorbid people, tobacco and alcohol users are equally susceptible to symptomatic COVID-19 disease therefore strict preventive public health measures should be taken by the community. Study on other unknown factors like the genetics, race, ongoing treatment for underlying comorbid disease should be planned to understand the other risk factors of the novel disease.

Recommendations

In the present study all age group, comorbid people, tobacco and alcohol users are equally susceptible to symptomatic COVID-19 disease there for strict preventive public health measures should be taken by the community. Also, study on other unknown factors like genetics, race, ongoing treatment for underlying comorbidities should be planned to understand the other risk factors of the novel disease.

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