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Assessment of Cigarette Smoking Status among Recovered Covid-19 Patients- A Cross-Sectional Study

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ABSTRACT

Introduction: Tobacco smoking is one of the key lifestyle risks for premature death. Smoking any type of tobacco decreases lung capacity and increases the risk of respiratory infection. The impact of tobacco smoking on SARS-COV-2 infection is unknown but recent research suggests it may worsen the disease severity. To counteract the COVID-19 pandemic, several countries-imposed lockdown measures. This would have some behavioural change among smokers. As a result, this study aims to assess the smoking status of COVID-19 patients who have recovered.

Objective: To determine the status of cigarette smoking in recovered covid-19 patients using a self-administered online questionnaire in Belagavi, Karnataka, India

Material and Methods: A cross-sectional study was conducted from October 2021 to January 2022 using a self-administered questionnaire. Data on smoking status before COVID-19 exposure, after COVID-19 exposure, and recovery from COVID-19 was collected among male participants over the age of 20.

Results: There is a significant increase in the frequency of smoking among those aged 20 to 30 years. While there is a decline in the frequency of smoking before COVID-19 and after recovery in the age group over 30 years.

Conclusion: When comparing smoking frequency after COVID-19 recovery to smoking frequency before COVID-19 exposure, our findings revealed that smoking prevalence is higher among people aged 20 to 30, which could be due to stress, loneliness, or other factors. However, after recovering from COVID-19, the smoking frequency decreased in the over-30 age group, and they were less inclined to quit or reduce their smoking.

Keywords: COVID-19, Cigarette smoking, pandemic, smoking status;

INTRODUCTION

Tobacco smoking is one of the key lifestyle risks for premature death. Anticipation for smokers is about a minimum of 10 years lesser than that for non-smokers. More than 8 million deaths annually are because by Tobacco [1]. Among those, 7 million deaths are because of direct tobacco use and around 1.2 million deaths are because of passive smoking. Of the world's 1.3 billion tobacco users, 80% of them reside in low- and middle-income countries[2].

Globally, the current smokers are 942 million males and 175 million females aged 15 years or older. Over 50% of male daily smokers reside in countries with a medium or high human development index (HDI)[3]. According to the Adult Tobacco Survey India 2016-17, the most common form of tobacco use in India is smokeless tobacco, with khaini, gutkha, betel quid with tobacco, and zarda being the most commonly used items. Bidi, cigarettes, and hookah are three types of tobacco used for smoking.[4]

While the impact of tobacco smoking on SARS-CoV-2 infection is mostly unknown, recent research suggests that it may worsen disease severity and death in infected patients[5]

The World Health Organization (WHO) declared the COVID-19 outbreak, which was caused by the new SARS-CoV-2 coronavirus, a global public health emergency in January 2020, with a high danger of spreading to other nations.[6]

On March 11, 2020, the epidemic was classed as a pandemic. On 30 January 2020, the government of India acknowledged India's first case of COVID-19 in the state of Kerala, after a college student from Wuhan returned to state [7].

The epidemiological background, as well as the known danger of infection with a respiratory condition, may have motivated some smokers to quit or reduce their use[8].

Smoking any type of tobacco diminishes lung capacity, increases the risk of respiratory infections, and can make respiratory disorders worse. COVID-19 is a contagious infection that mostly affects the lungs. [9]

Smoking inhibits lung function, making it more difficult for the immune system to fight Covid-19 and other respiratory illnesses. According to available studies, smokers have a higher chance of severe COVID-19 outcomes and death.

Hence, the study aims to determine cigarette smoking status in recovered COVID-19 patients and to know the influencing factors associated with cigarette smoking.

METHODOLOGY

Study Design: A Cross-Sectional Study

Sources of Data: Recovered COVID-19 smokers' patients of Belagavi, Karnataka India.

The study period was from January 2021 to April 2022. A purposive sampling technique was used

Sample Size: 207

Inclusion Criteria:

- Male above or equal to 20 years of age who are smokers.

- Those who have recovered from COVID-19.

- Those who are literate to fill online questionnaire form (Google forms in English/Kannada/Hindi/Marathi)

- Those who have a smartphone.

Exclusion Criteria:

- Those who are not willing to give consent.

- Those suffering from Lung cancer or any lung disease such as asthma, COPD, etc.,

Informed Consent: An electronic written informed consent was obtained from each participant through a google form

Ethical consideration: Ethical Clearance of the study was taken from the Institutional Review Committee of J.N.M.C, KLE Academy of Higher Education and Research, Belagavi on 5th October 2021 to preceding data collection.

Confidentiality: Superior care was taken to maintain the privacy and confidentiality of the study participants.

Data Collection Tools: An online self-administered questionnaire.

Data Collection Procedures:

Male smokers who recovered from COVID-19 illness were explored from the electronic records of KLE charitable Hospital Belagavi. Their numbers were collected and through phone calls, the need and importance of the study was explained in their own regional language, they were assured to maintain their confidentiality, The questionnaire was translated into their preferred language (English, Hindi, Kannada and Marathi) and the link for the same was mailed through WhatsApp. Through the link, the participants could view the questions and answer them. The cover page of the questionnaire included a short introduction regarding the objectives, procedures, the participants voluntarily participating in the research process with declarations of confidentiality and anonymity. Each questionnaire had a Sociodemographic profile, which includes age, area of residence, socio-professional activity, education level, marital status, and occupation. The next part included the likelihood to have covid-19 exposure at their workplace. The present smoking status of participants is also included in the questionnaire. The latter part includes the frequency of cigarette smoking before, during and after the COVID-19 illness and their vaccination status against COVID-19.

Data Analysis:

The data were entered into MS excel and analyzed via Statistical Package for Social Sciences. Descriptive statistics were performed for the percentage and frequency distribution of quantitative and qualitative variables. Chi-square test was performed to determine the association between outcomes and the socio-demographic variables.

RESULTS

The participants' average age was 24.8 ± 5.6, according to Table 1. The majority of those who participated were college graduates (81.6%), single (79.7%), and live in a city (70 %). Students (37.2%) and health-care workers made up the majority of the group (31.9 %) .

Table 2 illustrates the distribution of 207 individuals based on their current smoking status, with 70 participants (33.8%) being ex-smokers, 44 participants (21.3%) being current smokers, and the remaining 93 participants (44.9%) being occasional smokers Table 3 shows the relationship between socio-demographic factors and current smoking status. There was no single factor that was statistically significant among these. Table 3 depicts the relationship between socio-demographic factors and the number of cigarettes smoked prior to COVID-19 exposure. Among these variables, educational level (0.025) is statistically significant. Table No. 23 depicts the relationship between socio-demographic factors and the number of cigarettes smoked following COVID-19 exposure. The level of marital status (0.001) is statistically significant among these factors. The relationship between socio-demographic characteristics and the number of cigarettes smoked after recovering from COVID-19 is shown in Table No:24. The degree of occupation (0.003) and marital status (0.001) are both statistically significant among these variables.

DISCUSSION

We observed that 70 participants (33.8%) were ex-smokers, 44 participants (21.3%) were current smokers, and the remaining 93 participants (44.9%) were occasional smokers in the current study. In a retrospective analysis of COVID-19 patients' smoking behaviors and hospitalization rates throughout New York City, it was reported that 837 patients (62.64 %) had never tried smoking, whereas 336 patients (25.14 %) were either smokers or had smoked in their lifespan.

In this study, we discovered that individuals aged 20-30 years old increased their smoking frequency from 88 % to 94 % after COVID-19 exposure and recovery and that those aged over 30 years old decreased their smoking frequency significantly after COVID-19 recovery. In contrast, according to research conducted in the United States in December 2020 among tobacco smokers, there was a total increase in the frequency of smoking during the pre-COVID-19 and COVID-19 periods, with 90.4 percent in the pre-COVID-19 period and 93.1 percent during the COVID-19 period.

Similar results were shown in the study carried out in the USA showing that the frequency of smoking found among smokers was increased to 93.8%

In the current study, the smoking frequency increased from 88.8 % to 90.4 % in persons aged 20-30 years, decreased from 93.8 % to 87.5 % in persons aged 31 -45 years, and remained unchanged in persons aged over 46 years. The study, which was carried out in France and published in October 2021, revealed that 26.7 % of individuals increased their smoking frequency, 18.6 % decreased their smoking frequency, and 54.7 % of participants stayed unchanged.

In the current study, 33.8 % of the participants were ex-smokers, 21.3 % were current smokers, and 44.9 % were occasional smokers. Similar findings were found in a French population with 35.6 % of ex-smokers, 5.1 % of current smokers, and 5.1 % of occasional smokers. Smokers composed 9.8% of current smokers and 11.7 % of former smokers in a similar study conducted in Israel in May 2020, compared to 19.4 % and 13.9 % of the adult population, respectively.

According to our findings, 57.5 % of the 207 participants intended to quit smoking after recovering from COVID-19, while 42.5 % did not. According to research released in June 2021 in California, 46.7 % of the 6870 smokers in the survey said they had considered quitting because of COVID-19, while the rest said they had not tried to quit.

CONCLUSION

Our research discovered that 81.6 % of smokers had a strong relationship with their education level before being exposed to COVID-19. Similarly, there was a link between smoking prevalence after exposure to COVID-19 and marital status, wherein the frequency of smoking was increased in singles. Our study proved that there was a statistically significant association between smoking and occupation in a way that the frequency of smoking increased after the recovery in health care professionals and students.

When comparing smoking frequency after recovery from COVID-19 to smoking frequency before exposure to COVID-19, our survey indicated that smoking prevalence is higher among participants aged 20 to 30 years old, which could be related to stress, isolation, or other influential aspects. However, in the over-30 age group, there was a decline in smoking frequency following recovery from COVID-19, and they were less likely to quit or limit their smoking use.

Only 73.9 % of the 207 participants in our study were vaccinated against COVID-1 with 2 doses, which could explain the milder severity of the disease in them

LIMITATIONS

- Our study is a cross-sectional study design that can identify associations but cannot identify a causal relationship.

- The only male population who were aged above 20 years were included in the study, adolescents who are at risk of exposure to smoking were not included which led to selection bias.

- Secondly, the frequency of smoking was asked using a self-administered questionnaire so the validity of the results may have been compromised because of recall bias.

- Only those who had in- patients records from KLE charitable hospitals were included in our study, so there were chances of missing other cases.

- Due to the COVID-19 pandemic, we conducted this survey online, hence only those participants who had a smartphone and were literate were included in the study which led to selection bias.

RECOMMENDATIONS

1. Patients admitted to the hospital with a smoking history should be followed up routinely.

2. Patients in home isolation should receive psychological counselling.

3. Ongoing public awareness campaigns should focus on behavioral changes to reduce smoking in the community.

4. People determined to quit smoking should be given moral as well as medical support.

5. Awareness campaigns to be done regarding the health hazards of smoking and the chances of serious outcomes due to COVID-19 in smokers.

6. Patients should receive health education and training to increase lung capacity.

Table No-1: Demographic details of the study

Participants (N =207).	
Characteristics	**Value (%)**
Age (mean ± SD)	24.8±5.6
Educational status	
High school	38 (18.35 %)
College graduate	169 (81.6 %)
Marital status	
Single	165(79.7%)
Married	42 (20.3%)
Residential area	
Urban	145(70%)
Rural	62(30%)
Occupation	
Students	77(37.2%)
Health-care Professional	31(15%)
Engineer	19(9.2%)
Government Employ	14(6.8%)
Business/Entrepreneurs	66(31.9%)
COVID-19 Exposure in the Workplace	
Yes	66(31.9%)
No	71(34.3%)
May be	60(29%)
Not Applicable	10(4.8%)

Table No-2: Distribution of study population according to Present Smoking Status

Present Smoking Status		
	Frequency	Per cent (%)
Ex-smoker	70	33.8
Current smoker	44	21.3
Occasional smoker	93	44.9
Total	207	100.0

Table No:3 Association between present smoking status and Sociodemographic factors

Variables		Current smoking status			
		Ex-smoker	Current smoker	Occasional smoker	
		count (%)	count (%)	count (%)	P-value
Age in years	20-30	63(33.5%)	38 (20.2%)	87(46.3%)	
	31-45	5(31.5%)	6(37.5%)	5(31.3%)	
	>=46	2(66.7%)	0(0%)	1(33.3%)	0.337
Residential area	Urban	53(36.55%)	27(18.62%)	65(44.82%)	
	Rural	17(27.41%)	17(27.41%)	28(45.16%)	0.265
Activity	High	24(23.7%)	21(20.7%)	56(55.44%)	
	low	38(44.7%)	16(18.82%)	31(36.47%)	
	Inactive	8(38.09%)	7(33.33%)	6(28.57%)	0.012
Education	High School	17(44.73%)	7(18.48%)	14(36.84%)	
	College graduate	53(31.36%)	37(21.89%)	79(46.74%)	0.287
Occupation	Student	35(45.45%)	10(12.98%)	32(41.55%)	
	Health care prof.	929.03%)	9(29.03%)	13(41.9%)	
	Engineer	4(21.05%)	4(21.05%)	11(57.89%)	0.22
	Govt. Employ	4(28.57%)	3(21.42%)	7(50%)	
	Business/Entrepreneurs	18(27.27%)	18(27.27%)	30(45.45%)	
Marital Status	Single	58(35.15%)	36(21.81%)	71(43.03%)	
	Married	12(28.57%)	8(19.04%)	22(52.38%)	0.549

Table No:3 Association between Number of cigarettes smocked before exposure to COVID-19 and Socio-demographic factors.

Demographic variables	No. cigarette smoked before exposure			P-value
(n=207)	**0 to 5**	**6 to 15**	**16 to 25**	
Age in years				
20-30	167(88.8%)	17(9%)	4(2.1%)	
31-45	15(93.8%)	0(0%)	1(6.3%	0.416
>=46	3 (100%)	0(0%)	0(0%)	
Residence				
Urban	132(91.03%)	9(6.2%)	4(2.7%	
Rural	53(85.48%)	8(12.9%)	1(1.6%)	0.257
Occupation				
Student	70(90.9%)	6(7.793%)	1(1.29%)	
Health care Professional	27(14.6%)	2(11.8%)	2(40%)	
Engineer	18(9.7%)	0(0%)	1(20%)	0.557
Government Employ	13(7%)	1(5.9%)	0(0%)	
Business/ Entrepreneurs	57(30.8%)	8(47.1%)	1(20%)	
Marital status				
Single	146(88.48%)	16(9.69%)	3(60%)	
Married	39(92.85 %)	1(2.38%)	2(4.76%)	0.157
Socio-prof. activity				
High	88(87.12%)	11(10.89%)	2(1.98%)	
Low	76(89.41%)	6(7%)	3(3.52%)	0.394
Inactive	21(100%)	0(0%)	0(0%)	
Education				
High School grad	31(81.57%)	7(18.42%)	0(0%)	
College Graduate	154(91.12%)	10(5.91%)	5(2.95%)	0.025*

Table No:4 Association between Number of cigarettes smoked after exposure to COVID-19 and Socio-demographic factors.

Demographic variables	No. of cigarettes smoked after exposure			P-value
(n=207)	**0 to 5**	**6 to 15**	**16 to 25**	
Age in years				
20-30	177(94.1%)	7(3.7%)	4(2.1%)	
31-45	14(87.5%)	2(12.5%)	0 (0%)	0.52
>=46	3(100%)	0 (0%)	0 (0%)	
Residence				
Urban	136(95.77%)	5(3.44%)	4(2.75%)	
Rural	58(93.54%)	4(6.45%)	0(0%)	0.271
Occupation				
Student	76(98.70%)	1(1.29%)	0(0%)	
Health care Professional	29(93.5%)	2(6.45%)	0(0%)	
Engineer	19(100%)	0(0%)	0(0%)	0.084
Government Employ	11(16.66%)	2(%)	1(%)	
Business/ Entrepreneurs	59(%)	4(%)	3(%)	

	0 to 5	6 to 15	16 to 25	
Marital status				
Single	160(96.96%)	3(1.81%)	2(1.21%)	
Married	34(80.9%)	6(14.2%)	2(4.76%)	0.001*
Socio-prof. activity				
High	93(92.07%)	5(4.95%)	3(2.97%)	
Low	80(94.11%)	4(4.7%)	1(1.176%)	0.67
Inactive	21(100%)	0(0%)	0(0%)	
Education				
High School grad	37(97.36%)	0(0%)	1(2.63%)	
College Graduate	157(92.89%)	9(5.32%)	3(1.77%)	0.332

Table No:5 Association between Number of cigarettes smoked after recovery from COVID-19 and Socio-demographic factors.

Demographic variables	No. of cigarettes smoked after recovery from COVID-19			P-value
(n=207)	**0 to 5**	**6 to 15**	**16 to 25**	
Age in years				
20-30	170(90.42%)	17(9.04%)	1(0.53%)	
31-45	14(87.5%)	2(12.5%)	0(0%)	0.961
>=46	3(100%)	0(0%)	0(0%)	
Residence				
Urban	133(91.72)	11(7.58%)	1(0.68%)	0.393
Rural	54(87.09%)	8(12.90%)	0(0%)	
Occupation				
Student	76(98.70%)	1(1.29%)	0(0%)	
Health care Professional	29(93.5%)	2(6.45%)	0(0%)	
Engineer	18(94.7%)	1(5.26%)	0(0%)	0.003*
Government Employ	9(64.28%)	5(35.71%)	0(0%)	
Business/ Entrepreneurs	55(83.33%)	10(15.15%)	1(1.51%)	
Marital status				
Single	156(95.54%)	9(5.45%)	0(0%)	0.001*
Married	31(73.80%)	10(23.80%)	1(2.38%)	
Socio-prof. activity				
High	90(89.10%)	10(9.90%)	1(0.99%)	
Low	77(90.58%)	8(9.41%)	0(0%)	0.803
Inactive	20(95.23%)	1(7.76%)	0(0%)	
Education				
High School grad	34(89.47%)	3(7.89%)	1(2.63%)	0.104
College Graduate	153(90.53%)	16(9.46%)	0(0%)	

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