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Clinical Epidemiology and Global Health 12 (2021) 100838

Contents lists available at ScienceDirect

Clinical Epidemiology and Global Health

journal homepage: www.elsevier.com/locate/cegh

Tobacco use pattern and quitting behaviour among healthcare professionals during the COVID-19 pandemic: Insights from a pan India online survey

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ARTICLE INFO

Keywords:
COVID-19
Health personnel
Tobacco use
Tobacco use disorder
Tobacco use cessation

ABSTRACT

Background: Healthcare professionals (HCPs) have a definite role in tobacco control and can help immensely by setting examples. The current study aimed to study the tobacco use pattern and quitting behaviour among HCPs of India during the COVID-19 pandemic.

Methods: We addressed the research objective using a cross-sectional, anonymous online survey using 'google form" among 687 HCPs of India during December 2020. Descriptive and inferential statistics were performed using SPSS.

Results: Overall, 32.6% of the HCPs were ever tobacco user while 23.4% and 16.9% were current and daily tobacco user. During the COVID-19 pandemic, 51.7% and 43.1% of HCPs cut down the frequency and amount of tobacco use respectively while for 24.1% COVID-19 pandemic exerted no effect on their tobacco use. Presence of vulnerable population at home [adjusted odds ratio (AOR): 17.5 (95% confidence interval (CI): 3.3–92.2)], ever tobacco quit attempt [AOR: 13.5 (95% CI:2.7–67.7)] and history of COVID-19 disease [AOR: 5.1 (95% CI:1.3–20.7)] significantly determined reduced tobacco use (60.3%) during the pandemic. Similarly, reduced tobacco use during the pandemic [AOR: 4.8 (95% CI:1.7–13.5)] and perception of both smoking and smokeless tobacco form to be harmful for COVID-19 [AOR: 4.8 (95% CI:1.7–13.5)] were the independent correlates of tobacco quit attempt (50.0%) during the pandemic.

Conclusion: Tobacco use was quite rampant among the HCPs with every fourth and sixth being a current and daily tobacco user respectively. During the COVID-19 pandemic three in every five HCPs surveyed reduced tobacco use while every second HCP made a quit attempt.

1. Introduction

Tobacco use is unwarranted as it is known to increase risk of various communicable (i.e., pneumonia, tuberculosis etc.) and non-communicable diseases (i.e., asthma, chronic obstructive pulmonary disease, lung cancer etc.).[1–3] There is lack of evidence which can establish tobacco as risk factor for corona virus disease-19 (COVID-19).[4,5] Although various researches labelled tobacco as cause of higher disease severity in hospitalized COVID-19 patients.[6,7] World Health Organization (WHO) and various other organizations has discouraged tobacco use from very onset of the COVID-19 pandemic despite lack of concrete evidence suggesting its causal role.[4,5] This caution on tobacco use might have been issued based on prevailing knowledge on tobacco as risk factor for various infectious respiratory illnesses.[1,3,8]

Being one of the largely affected countries in the COVID-19 pandemic, acceleration of tobacco control measures in India is need of the hour.[9] In India tobacco use is quite rampant with every fourth adult person in the country (28.6%) reported to be using it. The perception of harmful effects of tobacco is also considerably low as only 35.1% smokeless tobacco users and 49.3% tobacco users thought to be harmful in a recent pan India survey.[10] Higher tobacco use prevalence (higher vulnerability), indiscriminate spitting of tobacco juice by smokeless tobacco users (can be a mode of COVID-19 spread) and lower risk perception (lower tobacco quitting behaviour) are prevailing major challenges of both tobacco and COVID-19 control in the country.[11–13]

The role of healthcare professionals (HCPs) (doctors and nurses) in tobacco control is indisputable. They can actively advice and counsel their patients for tobacco cessation. Moreover, by their own behaviour related to tobacco (i.e., quitting, discouragement etc.) they can influence

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https://doi.org/10.1016/j.cegh.2021.100838
Received 9 May 2021; Received in revised form 12 July 2021; Accepted 21 July 2021
Available online 30 July 2021
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the concerned behaviour of many. But different prior surveys conducted in different parts of the world suggests that higher proportion of HCPs (14.8–57.6%) are tobacco users themselves.[14–18] A systematic review and metanalysis estimated 21.0% pooled prevalence of tobacco use among HCPs.[19] Moreover, what is more concerning that HCPs who are tobacco users themselves less likely elicit tobacco related behaviour and advice for tobacco cessation among their patients.[20,21] Thus, detailed exploration of tobacco related behaviours and their attributes of HCPs is need of the hour.

Despite our exhaustive efforts we could only retrieve few studies which explored tobacco related behaviour among HCPs of India. The prevailing Indian studies reported that tobacco consumption among healthcare workers may be as low as <1% or it may be as high as 43.4%.[22–24] Moreover all these prior Indian studies requited study subjects from limited geographical area. There was no prior national survey which have explored the issue. Concerning effect of COVID-19 on tobacco related behaviour, there were few studies which explored the same among general population.[25–28] Although, there was no published literature available globally or in India among HCPs regarding this. Therefore, this anonymous online survey was designed to elicit tobacco use pattern and quitting behaviour of HCPs (doctors and nurses) of India during the COVID-19 pandemic. The findings of the study will help us get a measure of the magnitude of the problem. Moreover, it will also help in identification of barriers and enablers of tobacco quitting behaviour among HCPs amid global pandemic.

2. Methodology

We addressed the research objective using an explorative cross-sectional design. The online survey tool was self-administered to the potential study participants using 'google form' (an online self-administered data collection tool by 'Google LLC') during December 2020. We included all HCPs (doctors and nurses) irrespective of their working sector (public/private), but they must possess a recognised degree in either modern or traditional medicine. A systematic review and meta-analysis by Nilan et al.[19] reported 21% pooled prevalence of tobacco use among HCPs. Assuming the prevalence of tobacco use among HCPs of India to be 21%, the minimum sample size for the study was calculated to be 643 using 'statulator' (an online sample size calculator) with 15% relative precision and 95% confidence level. A total of 687 HCPs during the study period consented to participate for the study.

A pre-tested structured questionnaire was used for the study and self-administered as "google form". The questionnaire contained 6 sections. Section 1: Study description and digital informed consent. Section 2: (background characteristics) Age, sex, occupation, present residing state or union territory, educational stream, marital status, vulnerable population at home, ever came in unprotected contact of a COVID-19 suspect or case, ever being diagnosed with COVID-19. Section 3: [Mark the responses which describes your tobacco use status till date (ever/current/daily/never) (multiple response)] (For each tobacco use status working definitions as defined in the study protocol were enlisted against that particular response). Those who reported to be daily tobacco user were administered rest portions of the questionnaire. Section 4: (Tobacco use characteristics): Tobacco products used, preference of tobacco use (alone/with friends), effect of COVID-19 on tobacco use, preferred tobacco form (smoking/smokeless). As per preferred tobacco form the study participants were administered specific versions of Fagerstrom Nicotine Dependence Scale (FNDS) in section 5A (for smokers)[29] and section 5B (for smokeless tobacco users).[30] Section 6: (Perceived risk in COVID-19 and related practices): Perceived risk of tobacco use in COVID-19 disease causation and severity, perceived form of tobacco that increases risk of COVID-19, ever tried to quit tobacco, tried to quit tobacco during the COVID-19 pandemic, ever advised tobacco cessation to patients and family members. The study questionnaire was developed after consulting various experts of the field. Followed by pretesting among 30 HCPs who were not included in the final sample. After required modifications based on received responses the tool was cleared for the final survey. FNDS for smokers had shown good internal consistency (Cronbach's alpha: 0.795) whereas FNDS for smokeless tobacco users was found to have acceptable internal consistency (Cronbach's alpha: 0.682).

The sampling technique used for the study was snow-ball type (non-probabilistic sampling) as we forwarded the study google form link using various social media platforms (i.e., WhatsApp, Facebook and Linked In) to some HCPs and asked them to percolate it further. For identification of duplicate responses email id of each respondent were also documented in the study tool. If a respondent had submitted multiple responses only the last response was considered for analysis. Notably, no duplicate submission was found during analysis.

2.1. Statistical analysis

The information collected in the google forms was downloaded in Microsoft excel sheet and analysed using Statistical Package for Social Sciences (SPSS) (Version 22). Qualitative variables were reported using frequency (percentage) whereas mean [standard deviation (SD)] was used to report quantitative variables. Univariate logistic regression and multivariable logistic regression were performed to identify significant attributes of reduced tobacco use and quit attempt among HCPs during the pandemic. Odds ratio (OR) with 95% Confidence Interval (CI) were used to report the strength of association. For all analysis statistical significance was set at p value < 0.05.

2.2. Definitions used

Reduced tobacco use: Those who reported to have cut down frequency and/or amount of tobacco consumption during the COVID-19 pandemic.

Ever tobacco user: Ever used tobacco till date (even a single stick or pouch).[31]

Current tobacco user: Used tobacco products in last 1 month (from the day of documenting response in the 'google form') (even a single stick or pouch).[31]

Daily tobacco user: Using tobacco products daily (on time of furnishing their response) (even a single stick or pouch).[31]

Nicotine dependence: Nicotine dependance score was calculated separately by summing up individual items of the respected scales for smokers and smokeless tobacco users. The minimum possible score for both the scales were 0 while maximum possible score for smokers and smokeless tobacco users' scales were 16 and 15 respectively. A nicotine dependance score of less than 5 was deemed as low to moderate dependance while a score of more than equal to 5 was deemed as moderate to high dependance for both smokers and smokeless tobacco users (Table 1).[29,30]

3. Results

3.1. Study participants as per their present residing state and tobacco use status

The participation of HCPs from various states of India is presented in Fig. 1. Maximum participants were from Bihar (36.5%) followed by West Bengal (7.6%), Delhi (7.1%) and Uttar Pradesh (6.0%). Overall, 32.6% of the HCPs were ever tobacco user while 23.4% and 16.9% were current and daily tobacco user respectively. Considering magnitude of daily tobacco use for each individual state for which at least 5 responses were available, West Bengal (23.1%) topped the list followed by Punjab (20.0%), Bihar (19.9%), Haryana (18.2%), Maharashtra (18.2%) and Rajasthan (17.9%) (Fig. 2).

Table 1
Distribution of the study participants as per their responses of Fagerstrom nicotine dependence scale: n = 116.

Variables	N (%)	Score
For Smokers: (N = 91)		
How soon after waking do you smoke your first cigarette?		
Within 5 min	19 (20.9)	3
5–30 min	22 (24.2)	2
31–60 min	50 (54.9)	1
Do you find it difficult to refrain from smoking in places where it is forbidden?		
Yes	37 (40.7)	1
No	54 (59.3)	0
Which cigarette would you hate to give up?		
The first one in the morning	32 (35.2)	1
All others	59 (64.8)	0
How many cigarettes a day do you smoke?		
10 or less	70 (76.9)	0
11–20	15 (16.5)	1
21–30	6 (6.6)	2
31 or more	0 (0.0)	3
Do you smoke more frequently in the morning?		
Yes	32 (35.2)	1
No	59 (64.8)	0
Do you smoke even if you are sick?		
Yes	45 (49.5)	1
No	46 (50.5)	0
For smokeless tobacco users: (N = 25)		
How soon after you wake up, you consume your first smokeless tobacco pouch?		
Within 5 min	4 (16.0)	3
6–30 min	5 (20.0)	2
31–60 min	6 (24.0)	1
After 60 min	10 (40.0)	0
How often do you intentionally swallow tobacco juice?		
Always	6 (24.0)	2
Sometimes	14 (56.0)	1
Never	5 (20.0)	0
Which smokeless tobacco intake is most difficult for you to quit?		
The first one in the morning	11 (44.0)	1
All others	14 (56.0)	0
How many cans/pouches per week do you use?		
More than 3	7 (28.0)	2
2–3	10 (40.0)	1
1	8 (32.0)	0
Do you chew more frequently during the first hours after awakening than during the rest of the day?		
Yes	15 (60.0)	1
No	10 (40.0)	0
Do you chew even if you are ill?		
Yes	19 (76.0)	1
No	6 (24.0)	0

3.2. Background characteristics of the study participants

The mean age of the daily tobacco users were 32.5 years with standard deviation (SD) of 8.9 years. Majority of them were male (91.4%), doctor (89.7%) and practicing modern medicine (97.1%). About half of them (48.2%) were currently married while 21.4% of them were not staying with their spouse. Most of the HCPs (60.3%) had vulnerable population at home (Table 2).

3.3. Tobacco use behaviour of the daily tobacco users

Majority of the daily tobacco users preferred smoking form of tobacco (78.4%) and had preference for cigarettes (81.0%) followed by Gutka (a form of smokeless tobacco) (19.0%) and Zarda (a form of smokeless tobacco) (6.9%). A quarter (25.0%) of the participants were found to have moderate to severe dependence on nicotine and the rest (75.0%) have low to moderate dependence on nicotine (Table 3).

3.4. Effect of COVID-19 on tobacco use

Overall, three-fifth (60.3%) of the HCPs have either cut down tobacco use frequency or amount. About half of the study subjects (51.7%) have cut down frequency of tobacco use while 43.1% have cut down amount of tobacco use. Three-fourth (27.6%) of the HCPs have stopped consuming with peers while for 24.1% the pandemic did not make any impact on their tobacco use (Fig. 3).

3.5. Determinants of reduced tobacco use and quit attempt during the pandemic

In multivariable logistic regression model; presence of vulnerable population at home [adjusted odds ratio (AOR): 17.5 (3.3–92.2)], ever tobacco quit attempt [AOR: 13.5 (2.7–67.7)] and history of COVID-19 disease [AOR: 5.1 (1.3–20.7)] significantly determined reduced tobacco use among the HCPs during the pandemic [$R^2 = 62.2\%$; predictive accuracy rate (PAR) = 84.5%]. Reduced tobacco use during the pandemic [AOR: 4.8 (1.7–13.5)] and perception of both smoking and smokeless tobacco form to be harmful for COVID-19 [AOR: 4.8 (1.7–13.5)] were the multivariable associates of tobacco quit attempt during the pandemic [R^2 = 35.8%; predictive accuracy rate (PAR) = 73.3%] (Table 4).

4. Discussion

We administered a self-administered structured questionnaire in online mode using cross-sectional design among HCPs of India to elicit

Fig. 1. Map of India showing distribution of the study subjects as per their present residing state or union territory.

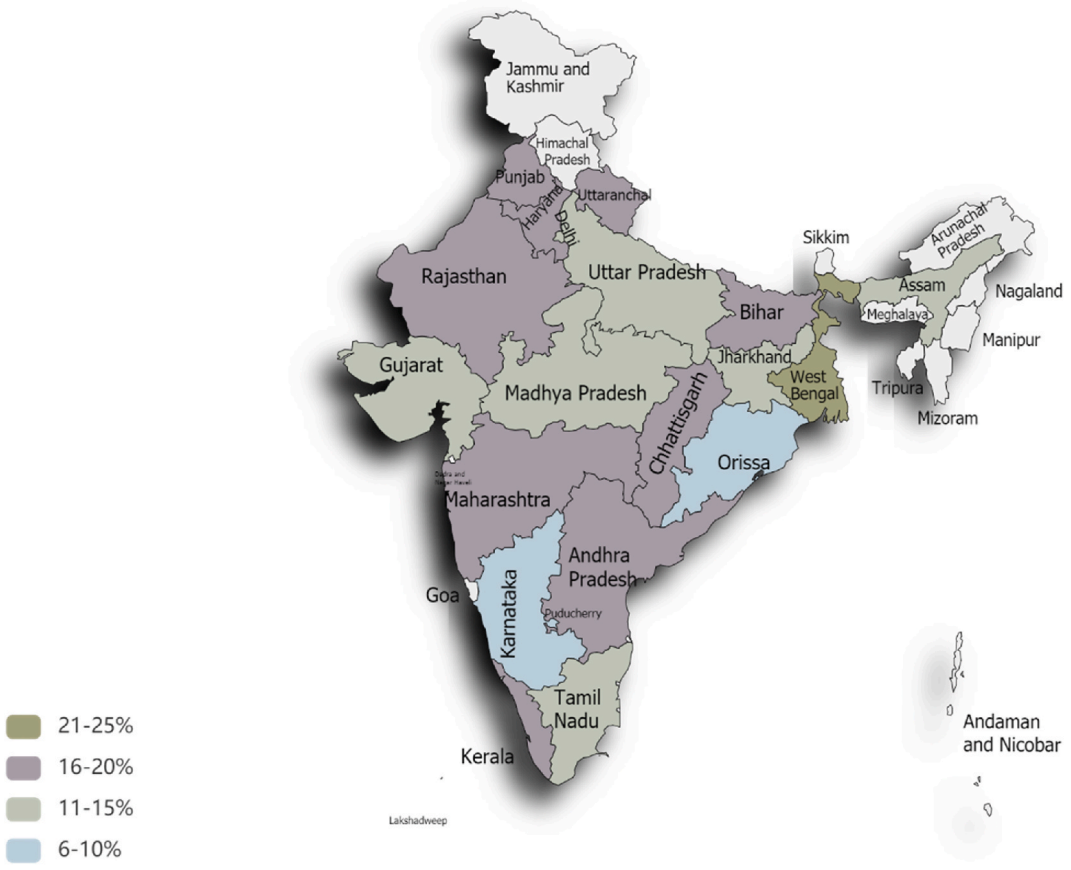

Fig. 2. Map of India showing distribution of the proportion of the study subjects using tobacco products daily as per their present residing state or union territory.

Table 2
Background characteristics of the study participants: n = 116.

Variable	N (%)
Age in completed years:	
<30	56 (48.3)
30–39	38 (32.8)
40–49	15 (12.9)
≥50	7 (6.0)
Gender:	
Male	106 (91.4)
Female	10 (8.6)
Occupation:	
Doctor	104 (89.7)
Nurse	12 (10.3)
Educational Stream:	
Modern medicine	101 (87.1)
Nursing	12 (10.3)
Dental	1 (0.9)
AYUSH*	2 (1.7)
Marital Status:	
Currently married and staying with spouse	44 (37.9)
Currently married but not staying with spouse	12 (10.3)
Currently unmarried	58 (50.0)
Divorced/Separated	2 (1.7)
Vulnerable population at home: (multiple response)	
Children aged <10 years	43 (37.1)
Elderly aged ≥60 years	42 (36.2)
Persons with chronic disease (i.e., HTN†, DM‡)	40 (34.5)
Not Applicable	46 (39.7)

*Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy.
†hypertension.
‡diabetes mellitus.

Table 3
Practices and perceptions related to tobacco use in context of COVID-19 among the study participants: n = 116.

Variable	N (%)
Type of tobacco products consumed:	
Cigarette	94 (81.0)
Bidi	5 (4.3)
Gutka	22 (19.0)
Khaini	7 (6.0)
Zarda	8 (6.9)
Others	2 (1.7)
Preferred tobacco form:	
Smoking	91 (78.4)
Smokeless	25 (21.6)
Nicotine Dependence:	
Low to moderate	87 (75.0)
Moderate to high	29 (25.0)
Preference of tobacco use:	
With friends or colleagues	42 (36.2)
Alone	74 (63.8)
Ever tried to quit tobacco: (Yes)	83 (71.6)
Made tobacco quit attempt during the COVID*-19 pandemic: (Yes)	58 (50.0)
Perceived tobacco as risk factor for COVID*-19 disease causation: (Yes)	58 (50.0)
Perceived tobacco as risk factor for COVID*-19 disease severity: (Yes)	80 (69.0)
Perceived tobacco form that increases the risk of COVID*-19:	
Only smoking	61 (52.6)
Only Smokeless tobacco	9 (7.8)
Both smoking and smokeless tobacco	31 (26.7)
None	15 (12.9)
Ever came in unprotected contact with a suspect or confirmed COVID-19 case: (Yes)	60 (51.7)
Ever diagnosed with COVID-19: (Yes)	42 (36.2)

*Corona Virus Disease.

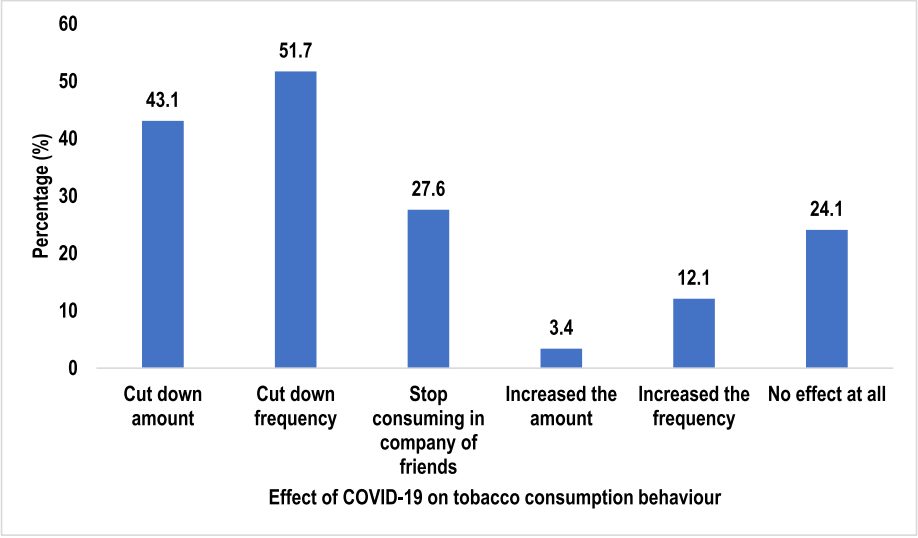

Fig. 3. Bar chart showing distribution of the study subjects as per effect of COVID-19 pandemic on their tobacco consumption behaviour: (multiple response).

Table 4
Univariate and multivariable logistic regression analysis showing predictors of reduced tobacco use and quit attempt during the COVID-19 pandemic among the healthcare professionals: n = 116.

Variable	Reduced tobacco Use; Yes = 70 (60.3%)			Made tobacco quit attempt; Yes = 58 (50.0%)		
	N (%)	COR† (95%CI‡)	AOR§ (95%CI‡)	N (%)	COR† (95%CI‡)	AOR§ (95%CI‡)
Age in years: (<30)	40 (71.4)	**2.5 (1.2–5.4)**	3.4 (0.8–14.1)	27 (48.2)	0.9 (0.4–1.8)	–
Gender: (Female)	9 (90.0)	6.6 (0.8–54.3)	–	3 (30.0)	0.4 (0.1–1.6)	–
Occupation: (Doctor)	63 (60.6)	1.1 (0.3–3.7)	–	53 (51.0)	1.4 (0.4–4.9)	–
Marital Status:						
Married and staying with partner	23 (52.3)	**0.4 (0.2–0.9)**	0.2 (0.0–1.3)	23 (52.3)	1.2 (0.6–2.7)	–
Married and not staying with partner	4 (33.3)	**0.2 (0.1–0.7)**	0.4 (0.1–2.8)	7 (58.3)	1.6 (0.5–5.6)	–
Unmarried/divorced/separated	43 (71.7)	Ref.	Ref.	28 (46.7)	Ref.	
Vulnerable population at home: (Yes)	50 (71.4)	**3.3 (1.5–7.1)**	**17.5 (3.3–92.2)**	41 (58.6)	**2.4 (1.1–5.2)**	1.0 (0.4–2.8)
Preferred tobacco form:						
Smokeless	16 (64.0)	1.2 (0.5–3.0)	–	18 (72.0)	**3.3 (1.2–8.6)**	2.9 (0.9–8.9)
Smoking	54 (59.3)	Ref.		40 (44.0)	Ref.	Ref.
Preference of tobacco use:						
With friends or colleagues	28 (66.7)	1.5 (0.7–3.3)	–	23 (54.8)	1.3 (0.6–2.9)	–
Alone	42 (56.8)	Ref.		35 (47.3)	Ref.	
Nicotine dependence:						
Low to moderate	59 (67.8)	**3.4 (1.4–8.3)**	3.4 (0.9–12.2)	49 (56.3)	**2.9 (1.2–7.0)**	3.0 (0.9–9.5)
Moderate to high	11 (37.9)	Ref.	Ref.	9 (31.0)	Ref.	Ref.
Ever tried to quit tobacco: (Yes)	62 (74.7)	**9.2 (3.6–23.5)**	**13.5 (2.7–67.7)**	–	–	–
Reduced tobacco use during the COVID*-19 pandemic: (Yes)	–	–	–	46 (65.7)	**5.4 (2.4–12.4)**	**4.8 (1.7–13.5)**
Perceived tobacco as risk factor for COVID*-19 disease causation: (Yes)	45 (77.6)	**4.6 (2.0–10.2)**	3.1 (0.8–12.5)	34 (56.8)	2.0 (0.9–4.2)	–
Perceived tobacco as risk factor for COVID*-19 disease severity: (Yes)	53 (66.3)	2.2 (0.9–4.9)	–	37 (46.3)	0.6 (0.3–1.4)	–
Perceived tobacco form that increases the risk of COVID*-19:						
Smoking	44 (72.1)	**6.3 (2.2–17.8)**	3.2 (0.7–14.2)	30 (49.2)	**2.9 (1.0–8.3)**	1.7 (0.5–5.7)
Both smoking and smokeless	19 (61.3)	**3.8 (1.2–12.0)**	0.3 (0.1–2.1)	22 (71.0)	**7.3 (2.2–24.5)**	**7.3 (1.8–30.3)**
Others	7 (29.2)	Ref.	Ref.	6 (25.0)	Ref.	Ref.
History of unprotected contact with COVID*-19 case or suspect: (Yes)	39 (65.0)	1.5 (0.7–3.2)	–	32 (53.3)	1.3 (0.6–2.7)	–
History of ever diagnosed with COVID*-19: (Yes)	34 (81.0)	**4.5 (1.8–10.9)**	**5.1 (1.3–20.7)**	26 (61.9)	2.1 (0.9–4.6)	–
Negelkerke R^2:	–	–	.622	–	–	.358
Hosmer Lemeshow test p-value:	–	–	0.07	–	–	0.33
Predictive accuracy rate (PAR):	–	–	84.5	–	–	73.3

*Corona Virus Disease.
†crude odds ratio.
‡confidence interval.
§adjusted odds ratio.

their tobacco use pattern and quitting behaviour during the COVID-19 pandemic. We found that every fourth and sixth study participant was a current and daily tobacco user respectively. Among daily tobacco users, every fourth HCP had moderate to high nicotine dependence. During the pandemic three in every five-study participant surveyed reduced tobacco use while every second HCP made a quit attempt.

4.1. Prevalence and pattern of tobacco use

Overall, we found that 32.6% of the study participants were ever tobacco user while 23.4% and 16.9% were current and daily tobacco user. Compared to our findings, less proportion of HCPs were reported to be tobacco users by Mony et al.[22] (reported 6.9%, 2% and <1% tobacco use among physicians, line workers and nurses respectively) and Sharma

et al.[24] (reported 12.5% healthcare workers as current tobacco users) whereas higher proportion by Prasad et al.[23] (reported 43.4% healthcare workers as current tobacco users). Smoking (78.4%) was the most preferred form of tobacco use among HCPs in our study. Similar observations have been made by Sharma et al.[24] but predominant smokeless tobacco use among healthcare workers have been reported by Prasad et al.[23] The variability of the findings may be due to use of selected geographical area for recruitment of the study participants[22–24] unlike ours which had participation from all corners of the country. Moreover, Mony et al.[22] and Prasad et al.[23] had recruited support staff (i.e. line workers, housekeeping staff etc.) in their sample in addition to HCPs which was unlike us.

4.2. Impact of COVID-19 pandemic on tobacco use

A high proportion (60.3%) of HCPs who were using tobacco have reduced tobacco use (60.3%; 51.7% reduced frequency and 43.1% cut down amount) and have made quit attempt (50.0%) during the pandemic in the present study. Despite extensive review we couldn't come across studies which have reported change in tobacco use behaviour among HCPs during the pandemic. However, few studies have explored the tobacco use behaviour during the pandemic among tobacco users in general population. Reduction in tobacco use among tobacco users in general population was less compared to our study [Chertok.[20]: 38.3% decreased smoking and 21.3% decreased frequency; Streck et al.[21]: 21.0% reported smoking less; Yingst et al.[22]: 15% reported decrease in their tobacco use).]. Similarly, tobacco quit attempt was lower among the tobacco users in general population as reported by Chertok.[20] (36.7%) and Yingst et al.[22] (24.5%). The proportion of HCPs (24.1%) in our study whose tobacco use did no change during the pandemic was very less compared to general population as reported by Chertok.[20] (43.3%), Streck et al.[21] (44.0%) and Gupte et al.[23] (70.0%). The HCPs are a special group and highly informed. Being well and adequately informed greatly influences the behaviour change.[24] Thus percolation of adequate information on ill effects of tobacco in general population might bring about a greater change on their tobacco use behaviour. In this aspect HCPs might play a huge role by active counselling of their patients and refraining themselves from all tobacco products.

4.3. Determinants of reduced tobacco use and quit attempt during the pandemic

In the present study with increasing age odds of reduced tobacco use among the study subjects during the pandemic also increased. Although such relation did not hold true for quit attempt during the pandemic. A study from US also have made similar observations of increased quit attempts among older current tobacco users.[20] This might be because of increased risk perception of both contracting and death due to COVID-19 among older individuals compared to younger ones.[32] In our study HCPs who perceived tobacco as risk factor for COVID-19 were more likely to reduce tobacco use during the pandemic. Similarly, HCPs who perceived both smoking and smokeless tobacco to be harmful for COVID-19 were more likely to do both tobacco use reduction and quit attempt. A longitudinal study during lockdown from India[23] reported similar observations where 51% of the tobacco users stopped tobacco use due to their concerns about coronavirus. Similarly a study from US[25] reported perceived risk of severe COVID-19 infection among smokers as predictor of desire to quit smoking since COVID-19. In our study, HCPs previously diagnosed with COVID-19 were more likely to reduce tobacco use during the pandemic. This might be due to their fear of reinfection or having severe form of the disease. The other possible reason could be restricted or no access to tobacco products due to quarantine/hospitalisation as a result of COVID-19 illness.[33] HCPs, who were married and staying with partner in the current study, were more likely to reduce tobacco use compared to those who were currently married and not staying with their partner. HCPs with vulnerable population at home were more likely to reduce tobacco use and make quit attempt during the pandemic. It was in line with the findings of Yingst et al.[22] were 31.6% study participants reported being around other non-smokers as the reason behind their reduced tobacco use. These findings are also in accordance with health belief model (HBM) which suggests that perceived risk for a disease significantly influences the behaviour associated with it.[34]

HCPs who had low to moderate nicotine dependence were more likely reduce tobacco use and make quit attempt during the pandemic than those with moderate to high nicotine dependence in the present study. High nicotine dependence needs higher mental determination, counselling and medical interventions to reduce or quit tobacco use. This could possibly explain the reason behind significant association between reduction in tobacco use and quit attempt in our study. In a cohort study from US[35] reported that tobacco users who had high nicotine dependence were 4.7 points less likely to achieve cessation at any point. This was in line with our observations.

4.4. Limitations

As per our knowledge based on exhaustive literature search, this was the first study conducted among HCPs of India which has elucidated their tobacco use pattern and quit attempt during the COVID-19 pandemic. Due to adaptation of self-administered method for data collection, the reporting, professional and social desirability related biases could not have been eliminated completely and possibly would have influenced the findings. However, we expect the occurrence of the prementioned biases to be low as the survey was administered in a highly educated study population, and participants were ensured about their confidentiality and anonymity. Moreover, participation of HCPs from every part of the country ensured data diversity and made the findings of the study more robust.

5. Conclusions

Tobacco use was quite rampant among the HCPs with every fourth and sixth being a current and daily tobacco user respectively. Presence of vulnerable population at home, ever tobacco quit attempt and history of COVID-19 disease significantly determined reduced tobacco use during the pandemic. Similarly, reduced tobacco use during the pandemic and perception of both smoking and smokeless tobacco form to be harmful for COVID-19 were found to be independent correlates of tobacco quit attempt during the pandemic. Being role model of the tobacco cessation campaign effective enforcement of tobacco cessation drive among HCPs is warranted. Good sign is during the COVID-19 pandemic three in every five-study participant surveyed reduced tobacco use while every second HCP made a quit attempt. They should be mentally supported to achieve and sustain tobacco abstinence.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethics approval

Ethics approval was obtained from Institutional Ethics Committee (IEC) of AIIMS-Patna (AIIMS/Pat/IEC/2020/633). In addition, digital informed consent from each study participant was obtained.

Declaration of competing interest

The authors have no conflicts of interest associated with the material presented in this paper.

Acknowledgement

We would like to thank all the healthcare professionals who enthusiastically participated and forwarded the study link to their peers, colleagues and contacts. Without their unconditional support this study would not have been possible.

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