Successful cessation of smoking among GAD patients during COVID-19 Pandemic: A Retrospective study in Eastern India

Debiprasad Mohanty[a] | **Puja Bhattacharyya**[b] | **Twinkle Rout**[a] | **Dattatreya Kar**[c] | **Sunil Agarwal**[a] ✉ | **Suvendu Narayan Mishra**[d]

[a]Department of Surgical Oncology, IMS & SUM Hospital, Siksha O Anusandhan (Deemed to be University), Kalinga Nagar, Bhubaneswar, Odisha, India .
[b]IDS, IMS & SUM Hospital, Siksha O Anusandhan (Deemed to be University), Kalinga Nagar, Bhubaneswar, Odisha, India.
[c]Department of Medical Research, IMS & SUM Hospital, Siksha O Anusandhan (Deemed to be University), Kalinga Nagar, Bhubaneswar, Odisha, India .
[d]Department of Psychiatry, IMS & SUM Hospital, Siksha O Anusandhan (Deemed to be University), Kalinga Nagar, Bhubaneswar, Odisha, India.

Abstract Tobacco use is one of the most significant causes of morbidity and mortality among patients suffering from psychiatric disorders. Even though the COVID-19 pandemic has been going on for two years, numerous researches have questioned the link between smoking and severe COVID-19. This paper aims to find out the outcomes of the pandemic fear intervention method in generalized anxiety disorder (GAD) patients with tobacco use. Only 48 patients were divided into two groups out of the total of 102 individuals. The only distinction between the two groups is the "pandemic fear intervention". These people were identified as heavy smokers seeking mental health treatment at the institution's mental health + de-addiction clinic. In comparison to the prior situation, counselling and cognitive behavioural therapy (CBT) resulted in significant improvements during the COVID-19 epidemic. All of the forty-eight patients were heavy smokers; the combination of COVID-19 anxiety and the lack of tobacco availability enhanced the ability of all forty-eight patients to stop smoking when rigorous psychotherapy health education and cognitive behavioural therapy (HE and CBT) was present. The COVID-19 fear factor's connection to the pandemic situation led to successful tobacco use cessation in 48 patients with chronic anxiety disorders, according to this study. Several tobacco use cessation sessions, as well as diverse technologies like CBT and health education counselling, are required for heavy smokers with general anxiety disorders. According to these models, the COVID-19 pandemic could be an important and counterintuitive motivator for quitting smoking. This study gives a fascinating fact and some data regarding COVID-19's impact on heavy smokers, in addition to the horrific misery it causes. We give an example of this by telling medical practitioners that they must use the "COVID-19 pandemic anxiety model" to extend patient lives, maintain environmental quality, and quit smoking.

Keywords: tobacco, cessation, COVID-19, psychiatric disorders

1. Introduction

After the COVID-19 virus escaped from Wuhan, China, till the end of 2019, numerous studies are trying to determine the likelihood or predictability of a coronavirus disease (COVID-19) pandemic in infected or healthy people (Richardson et al 2020; Kuanar et al 2021). The medical community lacks substantial prospective trials on cigarette use since SARS-CoV-2 is a novel viral agent. It is already established that smoking reduces immunity, damages bronchial epithelia, and makes infections more common and severe. Recent research by Brake et al. on the angiotensin-2 converting enzyme receptor revealed that nicotine directly impacts it, causing numerous viruses to enter the cell (Brake et al 2020; Li 2005). While nicotine was proven to be a protective factor against COVID-19 in another investigation, Lippi and Henry discovered no correlation between the severity of COVID-19 and cigarette usage in the Italian population during the COVID-19 pandemic (Lippi and Henry 2019; Tindle et al 2020). Contrarily, a different review asserted that cigarette use should be regarded as a risk factor (Vardavas and Nikitara 2020). Patients with mental disorders frequently use tobacco, and those with psychotic disorders specifically use tobacco at much greater rates. According to Ziedonis et al., 70–80% of the critical burden of smoking has an impact on one's mental or physical health (Ziedonis et al 2020). In a study comparing patients with schizophrenia, bipolar illness, and the general population, it was found that successful dropout rates are substantially greater in the general population (42%), compared to patients with schizophrenia (27%), and patients with bipolar disorder (16%) (Ziedonis et al 2020). Not with standing their psychiatric comorbidities, common smokers' motivation to quit is comparable to that of heavy smokers, who have a higher level of nicotine dependence (Lasser et al 2020). Patanavanich and Glantz indicate smokers are more likely to experience COVID-19 infection with high mortality (Patanavanich and Glantz 2020). Smoking tobacco often involves touching the lips with

fingers, which increases the likelihood of getting COVID-19 (El-Awa et al 2020). Smokeless tobacco (SLT) like gutkha, khaini, zarda, and paan causes salivation and leads to more spitting, which may also transmit the SARS-CoV-2 virus (WHO 2020, Coronavirus disease (COVID-19): tobacco). Giving tobacco users person-centered information is an essential intervention, as shown by the stages of change theory of Prochaska and DiClemene and motivational interviewing (Prochaska et al 2017). Patient with a history of smoking is significantly higher proportion of rapid deterioration in health during hospitalization as compared to non-smoker. suggesting that smoking may have a harmful effect on COVID-19 prognosis (Liu et al 2020). During the past few decades, control has benefited greatly from the fear messages placed on various cigarette products. If audiences aren't paralysed by the resulting dread and are given the necessary support to help them quit, the effectiveness of the warnings is increased (Miller and Rollnick 2013). According to several studies, COVID-19 anxiety may encourage some people to stop smoking (Hastings and MacFadyen2002). The rationale behind this study was that smokers with general anxiety disorder are encouraged to smoke more to reduce their anxiety level in day-to-day life, but smoking during the COVID 19 period weakens lung capacity and makes the SARS-CoV-2 more dangerous for people with smoking lungs.

This study aims to do smoking cessation in patients undergoing GAD treatment during COVID -19 pandemic and to see the effectiveness of COVID-19 pandemic anxiety model in smoking cessation. So, it indicates exploring the "COVID-19 pandemic anxiety model," which provides a paradoxically excellent opportunity to successfully engage and encourage heavy smokers to stop smoking through a variety of tobacco use cessation sessions. A clear message is there for the society through this article presenting 48 patient data.

2. Materials and Methods

The tertiary-care hospital Tobacco Cessation Center was the study site for seven months, from April 2021 to December 2021. The study is approved by the Institutional Ethics Committee for ethical clearance (DMR/IMSSH/SOA/180348). Full details of the procedures involved in the study were explained, and informed consent was obtained from all the participants. Initially, 102 patients were enrolled in this study because they had quit smoking. Of these, 48 patients met the inclusion criteria, and the remaining 54 participants were excluded from the study. Because 54 participants do not fall into inclusion criteria of this study. The inclusion and exclusion criteria of this study indicate that the inclusion criteria of this study contain. 1) All male patients (between 20 to 60years of age), 2) Current smokers (every day 1 or > 1 cigarette smoking), 3) A diagnosed case of anxiety disease by Mental health professional ,4) Patient undergoing anxiety treatment ,5) Not stop anti-anxiety medication. Meanwhile the exclusion criteria of this study are:, 1) Patient more than 60 years., 2) Use of alcohol or other substance., 3) Patient who is not diagnosed as a generalized anxiety disorder (GAD) by any mental health professional,4) Stopped treatment for anxiety or undergo random treatment Participants were randomly divided into two groups through randomization process because Randomization was performed immediately after enrollment of patient as the selected population is same eligibility criteria the researcher use Simple Random Sample method 1:1 randomized control method in two groups, with one participant in experimental group and the another one is control group. that shared a common factor, namely anxiety disorders. Psychiatric disorders such as generalised anxiety disorder, panic disorder, social phobia (or social anxiety disorder), and other variants were included. 48 people were enrolled for the intervention. One group received health education and cognitive behavioural therapy (CBT) interventions, and another group included an additional intervention called the Pandemic Anxiety Intervention. All subjects in the study received basic health education therapy through counselling and later according to the interventions of the groups. After dropping out of each group, the total number of participants was 48 GAD patients, of which 24 were in group 1 and 24 in group 2. (Group 1, HE + CBT, n = 24); (Group 2, HE + CBT + PANDAMIC FEAR, n = 24). All the individuals in Group 1 receiving HE and CBT received HE+CBT+PANDAMIC FEAR. All the participants were visited five times (first visit, followed by the 2nd, 6th, 12th, and 24th weeks) within the six-month duration.

Routine interventions were performed on all the 48 patients at the institution's tobacco cessation clinic. They expressed their difficulties with heavy smoking, including chronic psychiatric disorders during smoking cessation. After enrolling patients in this system, they have undergone one through five sessions over the course of six months. At the first visit, basic information was collected, the questionnaire was completed, and health education was conducted. Various materials were provided to the participants during the health education intervention period, including customised posters and videos developed in the local language (Odia, Hindi and English) explaining the tobacco-related deaths, chemical ingredients, and the process of addiction and its impact on health.

At the second visit, the 48 patients were computer-randomized into two groups: HE + CBT and HE + CBT + pandemic fear). The patients were blinded to their assignments to different intervention groups. The total five sessions were divided among all group participants, covering the 1st, 2nd, 6th, 12th, and 24th weeks from the 1st visit.

On the first visit, baseline data were collected. The self-structured case record form was prepared to know the patient's detailed history; the participant must have all the information available for which a self-assessment could be completed. The case record form includes various information like age, gender, occupation, marital status, and details about tobacco history (types of smoking, age of onset, socio-economic status, details of smoking history, number of years of regular use, past quit attempts for tobacco addiction, alcohol history, and motivational level of tobacco cessation) with a history of their psychiatric medications.

Fagerstrom's questionnaire form was used to know nicotine dependency in the 1st visit and last visit. A standard instrument for determining the degree of physical addiction to nicotine is the Fagerstrom's. The Fagerstrom Test for Cigarette Dependence (FTCD) which consists of six items and was modified from the Fagerstrom Tolerance Questionnaire (FTQ) is among the widely used instruments for measurement of nicotine addiction among the smokers. (Fagerström and Schneider 1989). Test for Nicotine Dependence. It includes six standards to assess the frequency and amount of cigarette use. Yes-or-no questions are graded on a scale from 0 to 1, while multiple-choice questions are graded on a scale from 0 to 3. The items are added to generate a score ranging from 0 to 10, (FTND). The higher the total Fagerstrom score, the more intense the patient's physical dependence on nicotine. All the data is collected and translated into MS Excel sheets in Microsoft Office.

At the 2nd visit, the patient who was previously enrolled in Group 1 received health education (HE) and cognitive-behavioral therapy (CBT) intervention. HE+CBT is provided through custom-made posters and videos developed in the local language (Odia, Hindi, and English), which clarified the tobacco-related negative impact and benefits of quitting the habit and the instructions on how to quit. In the intervention of CBT, cognition was provided through self-identification of the reason for the initiation of the habit, identification of the daily routine conditions, and learning to reduce and cope with the negative situation or urge associated with the withdrawal of nicotine and the various day-to-day tensions or stresses that provoke the usage.

In group 2, patients receive the same HE and CBT along with the pandemic fear model of COVID-19 intervention (HE+CBT+pandemic fear). Some questions about fear of covid-19 were included in the fear factor self-structure questionnaire. This new self-structured scale was administered to determine the severity of individual's fear of COVID-19 in anxiety patients. COVID -19 pandemic anxiety model is a self-structured questionnaire followed with Fear of COVID-19 Scale (Martínez-Lorca et al 2020) which has also been ethically approved by the institutional ethics commit. It was a seven-item scale and has a stable three-dimensional structure with fear psychometric properties. The participants were asked to indicate their level of agreement with the statements using a 'yes' or 'no' type scale. Answers included "yes" or "no," which indicates some questions like"1. Do you know if you do not quit smoking, you will be at high risk for the Corona virus?" 2. Do you know that cigarette smoking adversely affects a wide range of COVID-19 outcomes, such as hospitalisation and death? 3. Are you feeling uncomfortable thinking about coronavirus 19 when you smoke? 4: Do you know cigarette smoke exhibits increased pulmonary inflammation and a higher risk for developing COVID-19? 5-Did you know that smoking increases the risk of covid-19? If your lungs become infected with the corona virus as a result of smoking, you will die. 6: I know cigarette smoke increases the bronchial epithelium, thus facilitating the entry of SARS-CoV-2, which increases the risk of developing COVID-19 pneumonia.
7. Did you know that your anxiety is a secondary cause of your increased risk of contracting COVID-19? 8. Do you think that your anxiety disease will help you stop smoking? All the responses of each patient have been recorded by the researcher.

During each follow-up after the intervention, a follow-up timeline was set on a calendar, which was used to assess the self-reported outcome variables. At every follow-up visit, participants are screened for all parameters, such as reduced use, quit attempts, point prevalence, continuous abstinence, and relapse. Nicotine kit tests have been performed in the 24th-week follow-up. A standardised cotinine test was used to validate the self-reported quit rates. The cotinine test was done by a nicotine test kit with the help of a urine sample. The rapid kit includes 2 types of results (cotinine "positive" or "negative") if the patient used any form of nicotine before 5 to 7 days. The instructions for the cotinine test have been explained on the back side of the test kit. If the sample is wrongly placed, the result may be invalid, so the researcher helps the patient learn how to test it.

Participants in this study had five follow-up visits, including the first (first visit, followed up by a second, sixth, twelfth, and twenty-fourth follow-up visits), which was completed within six months of the study period. A questionnaire was used at the start of the study and follow-up examinations. The distribution of the mean Fagerstrom's addiction scale for smokers was assessed (Table 4). Participants were followed up for six months (a total of five sessions at the 1st, 2nd, 6th, 12th, and 24th weeks from the first visit), and follow-up reminders were done online by sending them reminder messages. Pearson's Chi-square test (Table 1) and paired and unpaired t-tests assess the effectiveness of all interventions within the groups on Chi-squared test was used to identify significant associations between cessation rate and intervention type, while logistic regression identified independent predictors of successful cessation. P-values < 0.05 were considered as statistically significant. Mann-Whitney U test compared the differences between independent groups to see the baseline assessment of addiction and knowledge score. P-values <0.05 was considered as statistically significant.

Data analysis was performed with IBM SPSS 22.0. The variables such as age, gender, socioeconomic status, form of tobacco use, details of GAD (General Anxiety disorders) and addiction, were used for the descriptive analysis. At the end, the outcome variables were evaluated using the chi-square test to determine the effectiveness of the intervention.

3. Results

During the study period, initially 102 patients from the smoking cessation group were taken. Of these, only 48 participants met the inclusion criteria (all are male and have anxiety disorders).
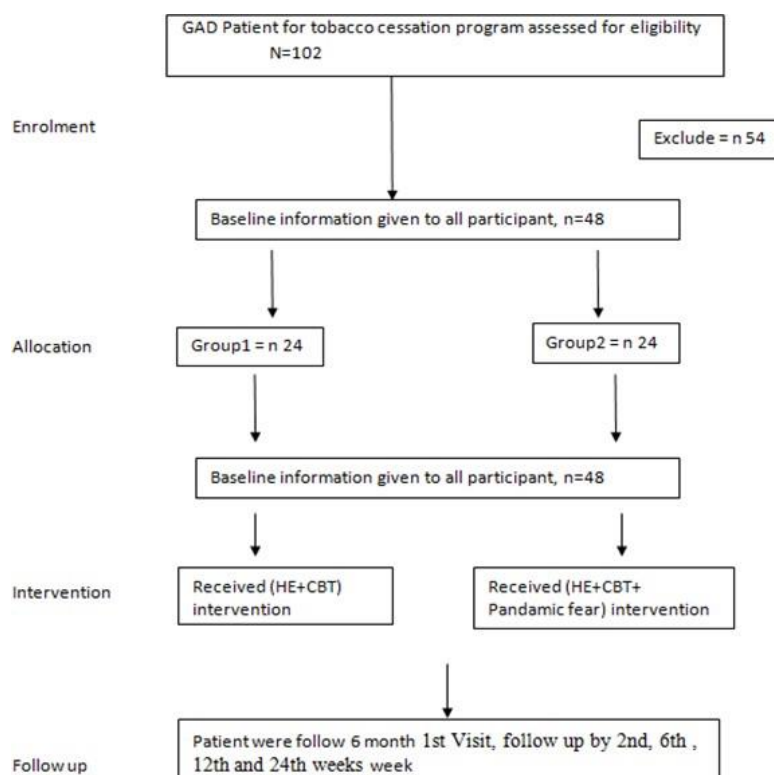
Figure 1 Demonstrates of the study design.

The average age of the participants was 48.3 years (SD =11.66). The majority of participants (60%) belonged to the lower to upper class in their socioeconomic status. Out of all 70% of participants were alcohol users. Nearly 95% of the participants were heavy smokers (n = 48; 94.84%). Pearson's chi-square test was used to compare between groups exercising participant's basic information and socioeconomic status, form of tobacco and alcohol use, and motivational stage, which showed no statistical significant difference between the two intervention groups. Basic knowledge was very poor; with a mean score of 7.21 (the maximum score was 21). The Mann-Whitney U test predicted similar outcomes in two intervention groups. This test assessed both groups' baseline scores for addiction and knowledge (Table 1).

Table 1 Demonstrates of the study design.

Baseline addiction knowledge	HE+CBT, n -24 (%)		HE+CBT+PANDEMIC FEAR, n -24 (%)		Z	P
	Mean	SD	Mean	SD		
Smoking Form	4.26	2.021	4.58	2.128	0.441	0.651
Smokeless Form	6.02	2.123	6.78	2.325	0.958	0.327
Knowledge Score	7.21	3.132	7.36	3.234	0.002	0.889

Between these two groups, interesting results were found. A higher percentage (75.3%) of reduction was found in group-2 than in group-1 (27.3%) (P = 0.002). The attempts to quit are similar in the two intervention groups (P = 0.063). In Group-2, the point prevalence of abstinence was significantly high i.e 72%. Most notably, the weaning outcome gives an amazing figure of 100% weaning in Group 2 after 6 weeks of intervention. Previously, patients were treated with cognitive behavioural therapy (CBT) and counselling, but the results were not that significant with GAD patients. The pandemic fear intervention probably has a good outcome for quitting smoking. A higher percentage (68%) of GAD patients who stopped smoking was found in group-2 than in group-1 (31.79%) (P=0.001). Relapse also played a significant role in these two interventions, with the majority of patients (33.4%) relapsing in group 2 (Table 2).

If Group 2 participants have no information on this statistic, the investigator alerts them to the pandemic's devastation. Fear of COVID-19 and the unavailability of tobacco products brought these stimuli to patients.

The evaluation over the course of all four weeks gradually showed a significantly low reduction in consumption in both groups. Group 2 had significantly more abstinence attempts than group 1 in the 24th week (P = 0.002). In the 6 weeks after the intervention, in the 24th week, Reduced Use, Quit Attempt, Point Prevalence, and Continuous Absence were significantly higher in Group 2. Relapse was more common in group 1, which is shown at the end of the 24th week (Table 2, relapse rate). In the baseline and 24th follow-up, the mean reduction in Fagerstrom's score in the two groups was significantly higher in group 1 (4.3, 5.5) followed by group 2 (4.2, 4.4) (Table 3).

Table 2 Evaluation of the effectiveness of total 2 groups using Pearson's Chi-square test.

Outcome Variables	G-1(HE+CBT), n -24 (%)	G-2(HE+CBT+ PANDEMIC FEAR), n -24 (%)	χ^2	P
Reduced Use	6(27.3%)	18(75.3%)	9.112	0.003$^\$$
Quit Attempt	22(92%)	23(93%)	8.328	0.063
Point Prevalence	13(55%)	17(72%)	0.067	0.008
Continuous Abstinence	7(31%)	16(68%)	12.19	0.000*
Relapse	17(71.3%)	8(33.4%)	0.051	0.045

*Highly significant, $ Significant. χ2 – Pearson's Chi-square test, HE –Health education, CBT –Cognitive.

Table 3 Evaluation of the percentage of outcome during follow-up (Follow up week 2nd, 6th, 12th and 24th).

Outcome Variables	G-1(HE+CBT), n -24 (%)	G-2(HE+CBT+ PANDEMIC FEAR), n -24(%)	χ^2	P
		Week 2		
Reduced Use	8(33.3%)	12(50%)	0.3818	0.943
Quit Attempt	11(45.83%)	19(79.16%)		
Point Prevalence	8(33.3)	12(50%)		
Continuous abstinence	3(12.5%)	3(12.5%)		
		Week 6		
Reduced Use	12(50%)	19(79.16%)	0.1474	0.985
Quit Attempt	13(54.16%)	20(83.33%)		
Point Prevalence	9(37.5%)	15(62.5%)		
Continuous abstinence	9(37.5%)	12(50%)		
		Week 12		
Reduced Use	15(62.5%)	19(79.16%)	0.6473	0.885
Quit Attempt	14(58.33)	19(79.16%)		
Point Prevalence	11(45.83%)	11(45.83%)		
Continuous abstinence	8(33.3%)	13(54.16%)		
		Week 24		
Reduced Use	7(29.16%)	17(70.83%)	8.338	0.002$^\$$
Quit Attempt	21(87.5%)	23(95.83%)		
Point Prevalence	14(58.33%)	18(75%)		
Continuous abstinence	7(29.16)	16(66.66)		

*Highly significant, $ Significant. χ2 – Pearson's Chi-square test, HE –Health education, CBT –Cognitive

Table 4 Fagerstrom's Nicotine dependency scale for smokers at baseline and follow-ups (baseline at 1st visit and 24th week)

Fagerstrom's Addiction Scale	Group-1 (HE+CBT) (N-24)		Group-2(HE+CBT+PANDEMIC FEAR) (N-24)	
	Baseline	24th follow up	Base line	24th follow up
≤ 8 score (Low to mild Dependency)	5(20.83%)	12(50%)	20(83.33%)	4(16.66%)
≥8 score (High dependency)	19(79.16%)	5(20.83%)	4(16.66%)	4(16.66%)
© 0 score (No dependency)	0	7(29.16%)	0	16(66.66)
Total	24(100%)	24(100%)	24(100%)	24(100%)
Mean	4.3±5.6	3.4±5.5	4.2±4.1	3.4±4.4

4. Discussion

In the scientific and medical fields today, there has been a conceptual shift towards the notion that all addiction is a disease rather than a habit (Klemperer et al 2020; Dingel et al 2012). Heavy drug use exacerbated changes in brain structure and function, which made quitting very difficult, even in patients with psychotic disorders. The disorder's behavioural and social components are essential, but addiction was what first caused it (Kmietowicz 2000).

The image of the fear factor has been included on the pack of cigarettes to reduce the number of tobacco users (Leshner 1997). But the results in society are not significant. A preliminary investigation into the role of fear of COVID-19 in motivation to quit smoking and reduction in cigarette smoking found that most participants (68.9%) reported smoking less frequently than usual in the past 28 days (Jandoo and Mehrotra 2008). However, in this study, it was discovered that the fear intervention group's reduce use rate was nearly as high (75.3%). An anxiety factor was also analysed in this study, and surprisingly satisfactory results in smoking cessation were found after the 6th week of the intervention, with 68% of patients stopping smoking with the help of fear intervention along with HE and CBT intervention. The fact that all locations were locked down and tobacco vendors were unavailable contributed to the best results. The mass media play a dual role in every situation, like two sides of the same coin. Even in the pandemic, they played on both sides. Because of this, many heavy smokers get scared, stimulate their cessation powers, and quit. Rigorous counselling gives psychotic symptoms an edge to correct any false

narratives and eventually promote smoking cessation. During the pandemic, various fake news sources are spreading rumours to entice all heavy smokers to smoke and protect themselves from COVID-19. Another study by Miyara et al. showed the frequency of tobacco use in two population groups (symptomatic COVID-19 patients and the general population) and found that tobacco use was less common in symptomatic COVID-19 patients than in the general population (Gold et al 2021). Patients also said that numerous online videos stated that the cigarette is very dangerous in a pandemic and causes more deaths than a non-smoker in pandemic times. Surprisingly, the internet and media provide good information and influence smokers to quit for health reasons (Miyara et al 2020; D'Souza et al 2020).

The two bimensal consultations that followed focused on decoding trustworthy and up-to-date information. In addition, a systematic review and a meta-analysis also suggest that tobacco use is associated with a poor prognosis for COVID-19 (Li et al 2020). Finally, Berlin and colleagues emphasised the difference between the putative protective effect of nicotine and the known devastating effects of tobacco (Patanavanich and Glantz 2020). The risk of more severe COVID-19 is higher when smokers suffer from chronic psychotic disorders; such patients require poor medical conditions (Berlin et al 2020; Zhao et al 2020; Martínez-Lorca 2020).

5. Conclusions

The pandemic is more or less suitable for smokers or tobacco users. It's a double-edged sword: it has already caused billions of deaths worldwide, and has generated high levels of fear and anger, but that fear and emotion can serve those in need of the patient. As these reports show, many are also long-time heavy smoker users. Still, in this particular context of pandemic fear, the COVID-19 model plays a tremendous role in helping GAD patients reduce and quit smoking behaviour. The psychiatrist and other healthcare professionals should emphasise in this model for the tobacco cessation. Furthermore, we can investigate whether this type of model can be used in other psychiatric patients who are interested in quitting smoking and other tobacco products. This model can be established and tip the scales in favour of smoking cessation as more scientific data become available in ambivalent patients.

6. Limitations of the Study

This study was conducted in a tertiary care hospital. The main concern of all patients was treatment. The issues are very minor in this pandemic fear model. The researchers and physicians should collect large amounts of data in order to set up a concrete hypothesis.

Ethical considerations

The study is approved by the Institutional Ethics Committee for ethical clearance (DMR/IMSSH/SOA/180348).

Conflict of Interest

There are no conflicts of interest.

References

Berlin I, Thomas, D, Le Faou A-L, Cornuz J (2020) COVID-19 and Smoking. Nicotine & Tobacco Research 22:1650-2. DOI: 10.1093/ntr/ntaa059

Brake SJ, Barnsley K, Lu W, McAlinden KD, Eapen MS, Sohal SS (2020) Smoking UpregulatesAngiotens in Converting Enzyme-2 Receptor: A Potential Adhesion Site for Novel Coronavirus SARS-CoV-2 (Covid-19). Journal of Clinical Medicine 9:841. DOI: 10.3390/jcm9030841

D'Souza RS, D'Souza S, Strand N, Anderson A, Vogt MNP, Olatoye O (2020) YouTube as a source of medical information on the novel coronavirus 2019 disease (COVID-19) pandemic. Global Public Health 15:935-942 DOI: 10.1080/17441692.2020.1761426

Dingel MJ, Karkaziz K, Koenig BA (2012) Framing nicotine addiction as a "disease of the brain": Social and ethical consequences. SocSci Q 92:1362-88.

El-Awa F, Fraser CP, Adib K, Hammerich A, Latif NA, Fayokun R..., St Claire S (2020) The necessity of continuing to ban tobacco use in public places post-COVID-19. Eastern Mediterranean Health Journal 26:630-632.

Fagerstrom KO, Schneider NG (1989) Measuring nicotine dependence: a review of the Fagerstrom Tolerance Questionnaire. Journal of behavioral medicine 12:159-182.

Gold AK, Hoyt DL, Milligan M, Hiserodt ML, Samora J, Leyro TM, Zvolensky MJ, Otto MW (2021) The role of fear of COVID-19 in motivation to quit smoking and reductions in cigarette smoking: a preliminary investigation of at-risk cigarette smokers. Cognitive Behaviour Therapy 50:295-304.

Hastings G and MacFadyen L (2002) The limitations of fear message. Tobacco Control 11:73-75.

Instrument: Fagerstrom Test for Nicotine Dependence (FTND). Available in: https://cde.nida.nih.gov/instrument/d7c0b0f5-b865-e4de-e040-bb89ad43202b.

Jandoo T and Mehrotra R (2008) Tobacco Control in India: Present Scenario and Challenges Ahead. APJCP 9:805-10.

Klemperer EM, West JC, Peasley-Miklus C, Villanti AC (2020) Change in Tobacco and Electronic Cigarette Use and Motivation to Quit in Response to COVID-19. Nicotine & Tobacco Research 22:1662-1663. DOI: 10.1093/ntr/ntaa072

Kmietowicz Z (2000) Doctors told to treat nicotine addiction as a disease. BMJ 320:397.

Kuanar A, Kabi SK, Satapathy S, Mishra S, Bhuyan R, Kar D (2021) Corona Virus-A Review Concerns about the Present Scenario. Annals of the Romanian Society for Cell Biology 25:1301-1315

Lasser K, Boyd JW, Woolhandler S, Himmelstein DU, McCormick D, Bor DH (2000) Smoking and Mental Illness. A Population-Based Prevalence Study. JAMA 284:2606. DOI: 10.1001/jama.284.20.2606

Leshner AI (1997) Addiction is a brain disease and it matters. Science 278:45-7.

Li F (2005) Structure of SARS Coronavirus Spike ReceptorBinding Domain Complexed with Receptor. Science 309:1864–1868. DOI: 10.1126/science.1116480

Li HO-Y, Bailey AMJ, Huynh D, Chan JWT (2020) YouTube as a Source of Information on COVID-19: A Pandemic of Misinformation? BMJ global health. 5(5): e002604. https://papers.ssrn.com/abstract=3569884

Lippi G, Henry BM (2020) Active smoking is not associated with severity of coronavirus disease 2019 (COVID-19). European Journal of Internal Medicine 75:107–108. DOI: 10.1016/j.ejim.2020.03.014

Liu, W., Tao, Z. W., Wang, L., Yuan, M. L., Liu, K., Zhou, L., ..., Hu, Y. (2020). Analysis of factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease. Chinese medical journal 133:1032-1038.

Martínez-Lorca M, Martínez-Lorca A, Criado-Álvarez JJ, Armesilla MD, Latorre JM (2020) The fear of COVID-19 scale: Validation in spanish university students. Psychiatry research 293:113350.

Martínez-Lorca M, Martínez-Lorca A, Criado-Álvarez JJ, Armesilla MDC..., Latorre JM (2020) The fear of COVID-19 scale: Validation in Spanish university students. Psychiatry research 293:113350.

Miller WR,Rollnick S (2013) Motivational interviewing: Helping people change (3rd ed). Guilford Press.

Miyara M, Tubach F, Pourcher V, Morelot-Panzini C, Pernet J, Haroche J, Lebbah S, Morawiec E, Gorochov G, Caumes E, Hausfater P, Combes A, Similowski T, Amoura Z (2020) Low rate of daily active tobacco smoking in patients with symptomatic COVID-19. Qeios. DOI: 10.32388/WPP19W.4

Patanavanich R, Glantz SA (2020) Smoking is Associated with COVID-19 Progression: A Meta-Analysis. Nicotine & Tobacco Research 22:1653-6. DOI: 10.1093/ntr/ntaa082

Patanavanich R, Glantz SA (2020) Smoking is associated with COVID-19 progression: a meta-analysis. Nicotine and tobacco research, 22(9), 1653-1656.

Prochaska JJ, Das S, Young-Wolff KC (2017) Smoking, Mental Illness, and Public Health. Annual Review of Public Health 38:165–185. DOI: 10.1146/ annurev-publhealth-031816-044618

Richardson S, Hirsch JS, Narasimhan M, Crawford JM, McGinn T, Davidson KW, and the Northwell COVID-19 Research Consortium, Barnaby DP, Becker LB, Chelico JD, Cohen SL, Cookingham J, Coppa K, Diefenbach MA, Dominello AJ, Duer-Hefele J, Falzon L, Gitlin J, Hajizadeh N, Zanos (2020) TP: Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. JAMA 2020. DOI: 10.1001/jama.2020.6775

Tindle HA, Newhouse PA, Freiberg MS (2020) Beyond Smoking Cessation: Investigating Medicinal Nicotine to Prevent and Treat COVID-19. Nicotine & Tobacco Research 22:1669- 1670. DOI: 10.1093/ntr/ntaa077

Vardavas C, NikitaraK (2020) COVID-19 and smoking: A systematic review of the evidence. Tobacco Induced Diseases 18(2):20 .DOI: 10.18332/tid/119324

World Health Organization. Coronavirus disease (COVID-19): tobacco. Accessed on: November 27, 2020. Available in: https://www.who.int/news-room/q-a-detail/coronavirusdisease- covid-19-tobacco.

Zhao Q, Meng M, Kumar R, Wu Y, Huang J, Lian N, Deng Y, Lin S (2020) The impact of COPD and smoking history on the severity of Covid-19: A systemic review and metaanalysis. Journal of Medical Virology 92:1915-21. DOI: 10.1002/jmv.25889

Ziedonis D, Hitsman B, Beckham JC, Zvolensky M, Adler, LE, Audrain-McGovern J, Breslau N, Brown RA, George, TP, Williams J, Calhoun PS, Riley WT (2008) Tobacco use and cessation in psychiatric disorders: National Institute of Mental Health report. Nicotine & Tobacco Research 10:1691–1715. DOI: 10.1080/14622200802443569.