

# Impacts of the COVID-19 pandemic on smoking cessation treatment

## Impactos da pandemia de COVID-19 sobre o tratamento para cessação do tabagismo

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### ABSTRACT

**Introduction:** The new Coronavirus pandemic has had an impact on health systems worldwide. Smokers were directly affected by these changes. **Objective:** To measure the new Coronavirus pandemic impact on smoking cessation from the analysis of data from the Pernambuco State Tobacco Control Program. **Method:** Descriptive cross-sectional study, using data from the monitoring strategy of the State Tobacco Control Program of the State Health Secretariat of Pernambuco (SES-PE) as the unit of analysis, comparing services in the second quarter of 2019 and 2020. **Results:** Between May and August 2019, 3.282 smoking patients sought treatment for smoking cessation in SUS, in Pernambuco. In a similar period, between the months of May and August of the year 2020, treatment for smoking cessation was sought by 680 smoking users, representing a drop of 79,28%. In addition, the number of municipalities offering treatment for smoking cessation in SUS dropped from 97 to 36 (62,89%) and the number of primary health care units providing treatment for smoking cessation in SUS went from 277 to 80 (71,11%). **Conclusions:** The decrease in the offer of treatment by the State Program to Combat Smoking is worrying. Although its relation with COVID-19 has not been fully elucidated, the cessation of tobacco use has already established benefits. Thus, it is necessary to encourage the adoption of new strategies and technologies, using the window of opportunity that the fear of COVID-19/smoking association created.

**KEYWORDS:** Anti-Smoking Campaign; COVID-19; Health Services Accessibility; Tobacco Use Cessation; Primary Care

### RESUMO

**Introdução:** A pandemia do novo coronavírus teve repercussões no funcionamento dos sistemas de saúde do mundo inteiro. O tabagista foi um grupo diretamente afetado por essas mudanças. **Objetivo:** Mensurar esse impacto a partir da análise dos dados do Programa Estadual de Controle ao Tabagismo de Pernambuco. **Método:** Estudo descritivo transversal, utilizando como unidades de análise dados da estratégia de monitoramento do Programa Estadual de Controle ao Tabagismo da Secretaria Estadual de Saúde de Pernambuco (SES-PE), comparando os atendimentos no segundo quadrimestre dos anos de 2019 e 2020. **Resultados:** Entre maio e agosto de 2019, 3.282 pacientes tabagistas buscaram tratamento para cessação do tabagismo no SUS, em Pernambuco. Em período similar, entre os meses de maio e agosto do ano de 2020, o tratamento para cessação do tabagismo foi procurado por 680 usuários tabagistas, representando uma queda de 79,28%. Além disso, o número de municípios oferecendo tratamento para cessação do tabagismo no SUS caiu de 97 para 36 (62,89%) e o número de unidades de saúde da atenção básica realizando tratamento para cessação do tabagismo no SUS de 277 para 80 (71,11%). **Conclusões:** A diminuição da oferta do tratamento pelo Programa Estadual de Combate ao Tabagismo é preocupante. Ainda que a sua relação com a COVID-19 não esteja completamente elucidada, a cessação do uso do tabaco traz benefícios já bem estabelecidos. Dessa forma, é necessário incentivar a adoção de novas estratégias e tecnologias, aproveitando a janela de oportunidade que o temor da associação COVID-19/tabagismo criou.

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**PALAVRAS-CHAVE:** Campanhas para o Controle do Tabagismo; COVID-19; Acesso aos Serviços de Saúde; Abandono do Uso de Tabaco; Atenção Básica



## INTRODUCTION

The emergence of a new type of coronavirus, SARS-CoV 2 (Severe Acute Respiratory Syndrome Coronavirus 2), first identified in Wuhan, China, in 2019, resulted in a pandemic of worldwide repercussion. In an attempt to prevent the collapse of health-care systems, social distancing measures were adopted on every continent to reduce the number of cases. These measures included international travel restrictions, movement limitations, curfews, and temporary closure of stores. This impact extended to healthcare services, which had to reduce outpatient care and elective procedures<sup>1</sup>.

In this context, according to data presented in the “*Tratamento do Tabagismo no SUS durante a pandemia de COVID-19*” (Treatment of Tobacco use in the SUS during the COVID-19 pandemic) report, prepared by the José Alencar Gomes da Silva National Cancer Institute (INCA), there was a significant decrease in the number of smokers undergoing treatment in Brazil’s Unified Health System (SUS). This decrease is explained by factors related to the decrease in demand, as well as the reduction in the supply of services. According to the agency, the removal of older healthcare professionals and the cases of COVID-19 among SUS workers, associated with the population’s fear of going to healthcare units, help explain the data<sup>2,3</sup>.

Smokers in social distancing present some risks, as demonstrated in a study with 3,632 people in Belgium, which analyzed the use of alcohol, tobacco and *Cannabis* during the lockdown in the country and found a marginal increase in tobacco use. The most exposed were young individuals, with low education levels and those with jobs related to countering the pandemic<sup>4</sup>.

However, we should point out that smoking is not only related to an increase in general mortality due to countless social and health problems that have already been described in the literature<sup>5,6</sup>, but also potentially to worse outcomes in cases of COVID-19, as the relationship between smoking and the reduction of pulmonary defense mechanisms has already been proven<sup>7,8</sup>. In this sense, cigarette consumption during the pandemic should be on the agenda of health authorities everywhere. South Africa, for example, banned the sale of non-essential products during the lockdown period, including cigarettes. That was praised by some experts, who also reinforced the need to offer support to those who wanted to quit smoking<sup>9</sup>.

In Brazil, among the 26 state capitals and the Federal District, the prevalence of smoking is 12.3% in males and 7.7% in females. Among the capitals, Porto Alegre has the highest percentage of smokers (14.6%), and Teresina, the lowest (4.4%)<sup>10</sup>. Despite this considerable prevalence, smoking has suffered severe setbacks in Brazil in recent decades. In fact, the fight against smoking in Brazil is considered a benchmark by the World Health Organization (WHO)<sup>11</sup>. Among the actions adopted by the country, we highlight the creation of antismoking campaigns, measures that restrict cigarette advertising, creation of smoke-free environments, and free treatment offered by the SUS<sup>12</sup>.

In 2005, the implementation of the WHO Framework Convention on Tobacco Control (FCTC/WHO) made the National Policy on Tobacco Control a State policy in Brazil. As a result, the prevalence of smokers in the country dropped from 15.7% to 9.8% between 2006 and 2019. The SUS smoking cessation treatment along with educational campaigns and legal enactments covering smoking prevention were fundamental for this<sup>13</sup>.

The National Tobacco Control Program (PNCT) is coordinated by INCA, however, state health departments have their own coordination offices that provide support to the municipalities. This is aimed at fulfilling the country’s objectives of decentralization and cross-sector initiatives. The actions include not only measures to discourage smoking initiation, but also the treatment of smoking, with the objective of providing the population with comprehensive care<sup>2</sup>.

In Pernambuco, a state whose capital has a prevalence of 7.9% of smokers<sup>10</sup>, measures to combat the coronavirus hindered the operation of several Family Health Units (USF) and Psychosocial Care Centers (CAPS), which offer treatment for smoking cessation. That is what prompted us into analyzing the impact of the COVID-19 pandemic on the state antismoking program.

This study aimed to analyze the impacts on smokers and on referral services in the state of Pernambuco (PE) in the second four-month period of 2019 and in the second four-month period of 2020. These periods were chosen because social distancing measure in Pernambuco began in March.

## METHOD

Cross-sectional descriptive study whose units of analysis were data from the monitoring strategy of the State Tobacco Control Program of the Pernambuco State Health Department (SES-PE), conducted by the state coordination office, based on an instrument filled out by Municipal Health Departments. This instrument feeds the Four-monthly Report of the National Program for Smoking Cessation of the SUS, which is made available by the INCA to support State and Municipal Health Departments in consolidating the profile of care provided to the population in the units that offer treatment for smoking cessation in the SUS.

The study addressed some particular variables that can be found in the Four-monthly Report of the PNCT/PE, according to the category stratification of the variables:

Category 1 – information about the municipality: state; regional health office; municipality; situation (functioning or restarting).

Category 2 – patient information: number of patients who sought treatment; by sex; by age group (< 18 years, 18-59 years and ≥ 69 years).

Category 3 – profile of health units: number of health units that provided care in the period; type of unit.



Category 4 – information on the type of care provided in the units: number of patients seen in the 1<sup>st</sup> clinical assessment; number of patients who participated in the 1<sup>st</sup> session; number of patients who participated in the 4<sup>th</sup> session; number of maintenance group participants; number of patients who used any medication to treat smoking.

For the decrease percentage analysis, we did the following calculation:  $100 - [(variable\ for\ the\ year\ 2020 \times 100) / variable\ for\ the\ year\ 2019]$ . The results were rounded according to the ABNT NBR 5891:2014 standard, and up to two decimal places were maintained.

This research was approved by the Research Ethics Committee of the Center for Health Sciences of the Federal University of Pernambuco (CEP/CCS/UFPE), under opinion n. 4.652.226 and CAAE n. 45065621.1.0000.5208. Since the data we used came from a database with aggregate data, the patients being monitored in the program cannot possibly be identified.

## RESULTS

Between May and August 2019, adding up the patients in the three age groups under study (< 18 years, between 18 and 60 years, and > 60 years), we found 3,282 patients who sought treatment for smoking cessation in the SUS, in the state of Pernambuco. Of these, 1,317 were males, 1,825 were females, and 140 were unreported. Forty-two patients were in the age group below 18 years of age, 2,288 patients were between 18 and 60 years of age, and 952 patients were in the age range of 60 years or older (Table).

In a similar period, between May and August of 2020, smoking cessation treatment was sought by 680 smokers in Pernambuco, of which 312 were males and 368 were females. Fourteen patients were in the age group below 18 years, while 535 were between 18 and 60 years, and 115 were in the age group of 60 years and over, in addition to 16 patients with unreported age.

For the range we considered, in 2019 there were health units offering SUS-based treatment for smoking cessation in 97

municipalities. Of these units, 277 were in Primary Care units, 12 were in CAPS units, and six were in specialized care units.

Between the months of May and June 2020, users found units performing SUS-based treatment for smoking cessation in 36 municipalities, with 80 units in Primary Care, six CAPS, and eight specialized care units.

Between May and August 2019, 3,069 patients underwent the first clinical assessment for smoking cessation. The number of patients participating in the first and fourth intensive sessions were 2,033 and 1,357, respectively. There were 1,325 smokers undergoing treatment in maintenance sessions and 2,086 users who used some medication associated with the treatment.

In the same interval, in 2020, 200 users attended maintenance sessions (an 84.90% decrease in comparison with 2019), and 441 patients maintained medication treatment (a 78.85% decrease in comparison with the same period). Meanwhile, 639 patients were seen at the first clinical assessment for smoking cessation (a 79.17% decrease in comparison with the previous year). The number of patients participating in the first intensive session was 590 and, in the fourth session, 463 (a decrease of 70.97% and 65.88% respectively in comparison with 2019) (Figure).

## DISCUSSION

The current outbreak of COVID-19 was declared a pandemic by the WHO due to its severity and worldwide spread<sup>14</sup>. The pursuit of solutions to mitigate the health, social and economic impacts of the pandemic resulted in the identification of groups that are potentially more vulnerable to transmission and health complications from the disease. These groups include smokers, who account for about 1 billion people worldwide and more than 20 million in Brazil<sup>15</sup>.

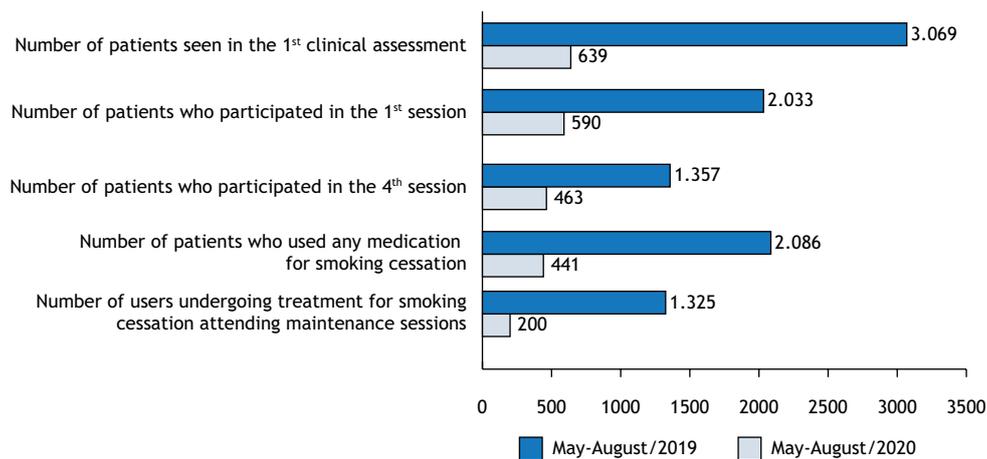
There is no consensus in literature as to the relationship between COVID-19 and smoking. Smoking is considered a worse prognostic factor for respiratory infections<sup>16</sup>. However, nicotine may have an effect on angiotensin receptors, which are implicated in the pathophysiology of infection with the new Coronavirus<sup>17</sup>.

Table. Characterization of smokers who sought SUS-based treatment and the offer of treatment in the second four-monthly periods of 2019 and 2020.

		May-August/2019	May-August/2020	Decrease 2020-2019 (%)
Smokers who sought SUS-based treatment in Pernambuco		3,282	680	-79.28%
Sex	Male	1,317	312	-76.31%
	Female	1,825	368	-79.84%
Age range	< 18 years	42	14	-66.67%
	18-59 years	2,288	535	-76.62%
	≥ 60 years	952	115	-87.92%
Number of municipalities offering SUS-based smoking cessation treatment		97	36	-62.89%
Number of primary care units performing SUS-based treatment for smoking cessation		277	80	-71.11%

Source: Prepared by the authors with data from the Four-monthly Reports of the Treatment Program for Smoking Cessation in the SUS for 2019 and 2020 (2021).

SUS: Unified Health System.



Source: Prepared by the authors with data from the Four-monthly Reports of the Treatment Program for Smoking Cessation in the SUS for 2019 and 2020 (2021).

Figure. Patients with access to treatment in the second four-monthly periods of 2019 and 2020.

The activation of these receptors causes epigenetic changes that may be responsible for lung damage<sup>18</sup>. Therefore, smoking induces a dose-dependent upregulation of these receptors<sup>19</sup> and increases the severity of the disease associated with the inflammatory response<sup>20</sup>. However, increases in angiotensin receptor expression may attenuate the risk of massive lung damage and exaggerated systemic response, which characterize severe forms of COVID-19<sup>21</sup>. Additionally, nicotine still seems to have a potential anti-inflammatory effect<sup>22</sup>.

Despite such conflicting data from a pathophysiological point of view, the pandemic has created an excellent window of opportunity for the fight against tobacco. The dissemination of news saying that smoking increases mortality levels, in line with articles showing an increase of up to 14 times compared to the general population<sup>23</sup>, had a positive effect on smoking cessation. A study at a smoking cessation clinic in Turkey that followed 357 patients has shown an 8% higher rate of smoking cessation between the years 2020 and 2021 compared to the same period of previous years, without any additional treatment<sup>24</sup>.

Another study, carried out by the University of Vermont with 345 smokers, has shown that the pandemic led about a quarter of respondents to reduce smoking, and more than a third reported increased motivation to quit. In addition, more than 20% of the respondents reported quitting smoking to reduce the risk of harm caused by COVID-19<sup>25</sup>.

However, the COVID-19 pandemic had a major impact on the Pernambuco State Tobacco Control Program. It resulted in a decrease in the provision of treatment in primary care units (a drop of about 71.11% in May-August/2019 to May-August/2020) and, consequently, fewer individuals were treated. Proof of this is that the number of smokers seeking treatment dropped from 3,282 in the period studied in 2019 to 680 in a similar range in 2020.

In this scenario, in 2019, 2,086 patients used some medication in their treatments and, in 2020, the number dropped to 441.

Different pharmacological strategies are available to treat smoking dependence, but they must be associated with non-pharmacological strategies<sup>26</sup>. We can assume that the impact of the COVID-19 pandemic also hindered patients' access to free medication via SUS, which affected the treatment of several users who depend entirely on the public health system.

In Brazil, in a cross-sectional study produced by the Oswaldo Cruz Foundation (Fiocruz) in partnership with the Federal University of Minas Gerais (UFMG) and the State University of Campinas (Unicamp) assessed the lifestyle and habits of more than 45,000 people during the pandemic and found that 34% of smokers started to consume more cigarettes per day<sup>27</sup>. These data are in conflict with the aforementioned references. This demonstrates the dependence and importance that these programs have in the fight against smoking and how interrupting the follow-up of these patients can be harmful and devastating. It also confirms the need to maintain these policies and create new strategies with appropriate adjustments to the period.

This divergence between the data needs to be further studied so we can better understand the reasons that led part of the population to reduce smoking and part to increase it. Some ideas can be suggested, like health education, access to information or the functioning of the health service in each region. However, maybe it is still too early to categorically state the cause of these differences, so further retrospective assessments of the landscape are required.

In this context of new challenges to the SUS, the implementation of cross-sector initiatives in primary health care can increase the success of clinical interventions for smoking cessation<sup>28</sup>. In this sense, it is important to note that access to treatment is very unequal<sup>29</sup>. Since primary care is on the front line of these efforts, it plays a major role in the Pernambuco State Program for Tobacco Control. In the interval considered for 2019, 94% of the appointments took place in primary care; similarly, in the period studied for 2020, 85% of the units that provided treatment for smoking cessation were in primary care, which confirms the inequality of access.



There is robust scientific evidence demonstrating that comprehensive smoking cessation interventions are effective and essential<sup>30</sup>. The Pernambuco State Tobacco Control Program offers a treatment with total recommended duration of 12 months, including stages of assessment, intervention and maintenance of abstinence. The assessment stage is when we learn about the patient's smoking history (including age of start and previous attempts to quit), pathological history (presence or absence of smoking-related diseases), assessment of nicotine dependence (test of Fagerström) and stages of motivation to start treatment. This preliminary assessment enables healthcare professionals to determine whether patients will need some type of medication<sup>31</sup> in addition to the cognitive-behavioral approach.

## CONCLUSIONS

COVID-19 has clearly disrupted public healthcare on a much broader scale than anticipated. The substantial decrease in

the offer of treatment by the state program in the municipalities, as exposed in this study, is a consequence of the problem. Although its relationship with COVID-19 is not fully elucidated, smoking cessation has well-established benefits.

Therefore, the adoption of new strategies and technologies to support the continuity of care within the SUS must be encouraged. This should be done to seize the opportunity created by the greater fear of more severe cases related to the COVID/smoking association.

This article is based on secondary data provided by the State Health Department, which, in turn, is based on information from Municipal Health Departments. In this way, local particularities that impair the proper functioning of municipal administrations, like the pandemic itself, as well as the municipal elections in 2020, may have led to underreporting of data for the second quarter of 2020.

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#### Authors' Contribution

Silva MVD, Monteiro MBA - Conception and planning (study design), data acquisition, analysis and interpretation, and writing of the manuscript. Sena AB - Acquisition, analysis, interpretation of data and writing of the manuscript. Martelli PJL, Heráclio IL, Ceballos AGC - Writing of the manuscript. All authors approved the final draft of the manuscript.

#### Disclosures

The authors report that there is no potential conflict of interest with peers and institutions, nor political or financial conflicts in this study.



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