ESTUDOS DE PSICOLOGIA
Psychological Studies

DOSSIER
DOSSIÊ

Trends on Behavioral Addictions
Temas em Dependências Comportamentais

Editor
André Luiz Monezi de Andrade

Conflict of interest
The authors declare they have no conflict of interests.

Received
October 6, 2021

Final version
March 5, 2022

Approved
August 16, 2022

Effect of Smoking Cessation Program: a review of this public policy for tobacco dependence

Fernanda Machado Lopes[1], Camila Angelina de Moraes[2], Gabriela Rodrigues[1], Louisi Cardozo[2], Jozabete Ferreira de Oliveira Bezerra[3], Karen Priscila Del Rio Szupszynski[4]

[1] Universidade Federal de Santa Catarina, Departamento de Psicologia, Programa de Pós-Graduação em Psicologia. Florianópolis, SC, Brasil. Correspondence to: F.M. LOPES. E-mail: <femlopes23@gmail.com>.
[2] Autonomous Research. Florianópolis, SC, Brasil.
[3] Universidade Federal da Grande Dourados, Departamento de Psicologia. Dourados, MS, Brasil.
[4] Pontifícia Universidade Católica do Rio Grande do Sul, Programa de Pós-Graduação em Psicologia. Porto Alegre, RS, Brasil.

How to cite this article: Lopes, F. M., Moraes, C. A., Rodrigues, G., Cardozo, L., Bezerra, J. F. O., & Szupszynski, K. P. D. R. (2023). Effect of Smoking Cessation Program: a review of this public policy for tobacco dependence. *Estudos de Psicologia* (Campinas), *40*, e210170. https://doi.org/10.1590/1982-0275202340e210170en

Abstract

Objective
Brazil Health Ministry's guidelines for tobacco control include the Smoking Cessation Program, developed by the Instituto Nacional de Câncer of Brazil. This review aims to describe the studies in which this Program has been applied, reviewing its procedures, effects, potential and limitations.

Method
Articles from PubMed, PsycINFO, Virtual Health Library and Scientific Electronic Library Online, published between 2002 and 2019, were evaluated, using the descriptors "Smoking Cessation Program" and "smoking cessation" in Portuguese, Spanish and English. A total of 1670 articles were pre-selected, of which 15 resulted eligible for final assessment.

Results
The results showed adherence rates from 33% to 100%, success rates from 15% to 85% after the intervention and 21% to 51% six months after treatment completion. This variability may be related to the lack of standardization and poor fidelity in the application of the Program, which intends to treat physical, psychological and behavioral dependence.

Conclusion
Investment in technical training and record monitoring is suggested.

Keywords: Evaluation of the efficacy-effectiveness of interventions; Tobacco use cessation; Tobacco use disorder; Treatment outcome.

Tobacco dependence is a chronic disease resulting from smoking and is characterized as a serious worldwide public health problem due to the consequences of the diseases resulting from tobacco consumption (World Health Organization [WHO], 2019). In Brazil, epidemiological data indicate that tobacco is considered a risk factor for more than 50 diseases, being directly associated with cancer and cardiovascular diseases (Instituto Nacional de Câncer [INCA], 2018), in addition to making individuals

more susceptible to developing complications of Severe Acute Respiratory Syndromes, such as the new coronavirus (Covid-19) (INCA, 2020a). In addition, the World Health Organization (WHO) indicated that tobacco addiction is the main cause of preventable deaths worldwide; smoking requires interventional actions with the expansion of measures to combat it, given the high costs for the health system and the economy (INCA, 2020c; WHO, 2019).

Accordingly, the WHO's main strategy to control smoking worldwide was the creation of the Framework Convention on Tobacco Control (FCTC), in force since 2005. The FCTC is based on six guidelines composed by the acronym MPOWER, in which each letter indicates a guideline such as: M (monitoring), means to monitor tobacco consumption and smoking prevention policies; P (protect), means to protect people from secondary smoking; O (offer), means to offer help to quit smoking; W (warn), means to inform the population about the smoking hazards; E (enforce), to reinforce the prohibition of advertising and marketing campaigns favorable to smoking; and R (raises), to increase taxes on tobacco products. The main contributions of the FCTC include the consolidation of smoking social rejection and the promotion of tobacco consumption control initiatives in the country, becoming a reference in the consolidation of the anti-smoking policy (Portes et al., 2018; Teixeira et al., 2017).

In Brazil, the structuring of the National Tobacco Control Policy (NTCP), has provided since 1986, a vast amount of legislative material regulating and restricting tobacco use. Standardizing actions have, over the years, made up a set of important knowledge in the field of tobacco control, giving Brazil the status of a world reference nation on this matter. The Federal Constitution of 1988 stands out amongst the set of anti-smoking legislative measures. The concept of health as a right of all and a duty of the Government, achieved through the institutionalization of the Brazilian *Sistema Único de Saúde* (SUS, Nation Health System), constitutes an important milestone in this trajectory, since it encompasses health prevention, health promotion and recovery actions (Portes et al., 2018; Silva et al., 2016; Teixeira et al., 2017).

In parallel, the Instituto Nacional de Câncer (INCA, National Cancer Institute), linked to the Ministry of Health (MH), has become the main body in the articulation and coordination of the NTCP since 1989. With the regulation of the SUS through Law nº 8.080/90, the responsibility for tobacco control of the MH through the INCA was reiterated, so that INCA took over and revitalized the NTCP, giving greater legitimacy to the actions. This body has been important in creating decentralization strategies, with leadership in structuring a network involving international agencies, government agencies and civil society; educational actions in schools, health units and work environments; and expanding access to nicotine addiction treatment offered by the SUS in Primary Health Care - the Smoking Cessation Program (SCP) (Portes et al., 2018; Teixeira et al., 2017).

These governmental and non-governmental initiatives had an effect, since the social rejection of tobacco was consolidated since the year 2000 and its use in public spaces came to be understood as a socially condemned practice (Silva et al., 2016; Teixeira et al., 2017); such rejection has produced smoking reduction rates that have been achieved in Brazil in recent years. However, we should recognize that there are still many actions to be developed and improved, such as, for example, intersectoral actions and assessments of the efficacy and effectiveness of public policies that receive investments, such as the Smoking Cessation Program (SCP) made available through the SUS network. This treatment, used since 2002 in some hospitals, was implemented in the Primary Health Care (Ordinances GM/MS nº 1,035, dated 2004, and SAS/MS nº 442, dated 2004), expanding smokers' access to therapeutic resources in the country (Malta et al., 2015).

Recommended by INCA/MH, the psychotherapeutic intervention method of the SCP uses a cognitive-behavioral approach together with pharmacotherapy (nicotine replacement and/or

bupropion prescription), if necessary. The protocol recommends four structured weekly sessions, with specific support and psychoeducation objectives toward smoking cessation and the use of didactic material (participant's handbook) and homework, followed by monthly maintenance meetings for up to six months. The sessions usually take place in a group mode (although they can be held individually) and must be coordinated by health professionals, preferably a pair of professionals with different specialties (INCA, 2020b).

The psychosocial intervention works on physical dependence, explaining tolerance (higher doses to obtain the same effect) and abstinence (negative physical reactions when consumption ceases); psychological dependence, investigating and discussing the role that smoking play in the individual's life, and behavioral dependence, verifying the participants' routine situations associated with the smoking habit. A positive correlation has already been demonstrated between these three types of dependence and among other variables related to smoking behavior, indicating that early in the habit-forming process, psychological dependence is more intense and, as the quantity and duration of tobacco consumption increase, physical and behavioral dependence also increase (Silveira et al., 2021). Considering the relevance of the treatment psychological aspect, cognitive-behavioral strategies, and techniques such as relaxation, coping cards, distraction, psychoeducation, activity monitoring and homework were considered effective in smokers' treatment (Lopes & Silveira, 2020).

Since the implementation of smokers' treatment in the SUS network, several studies have been carried out showing the rates of total program success, partial success or failure in the treatment of smokers in the short, medium and long term. However, to date, no studies have been identified that assess the effects of this intervention at a national level in a grouped way, or the fidelity of its application according to the model recommended by the INCA/MH. This study therefore aimed to review and describe the studies that applied the SCP in Brazil, reviewing procedures, effects, potentials and potential limitations of this public policy. It is believed that systematization of these studies, highlighting the effectiveness indicators will contribute to the offering of greater technical consistency to the professionals who work in the treatment of smoking addiction.

Method

In this critical review, articles covering the SCP published between 2002 and 2018 were assessed, taking into account that the SCP implementation approval took place in 2002 (MH Ordinance nº 1575 of 29/Aug/2002). The PubMed, PsycINFO, Virtual Health Library (VHL) and Scientific Electronic Library Online (SciELO) databases were used, due to the wide variety, quantity and quality of indexed articles they contain; the first two databases were the most used in the area of health and psychology to search for international articles and the last two for national and Latin American articles. Although the aim was to select only studies conducted at the national level, international databases ensured the inclusion of studies that applied the SCP in Brazil, but that were published in international journals. Accordingly, national and international articles in Portuguese, English and Spanish were considered.

From the research question "what is the effect of SCP applied in Brazil?", we chose to use the Boolean descriptors and operators "National Tobacco Control Program" OR "smoking cessation" OR "Tobacco Cessation Program" OR "smoking cessation program" OR "smoking cessation intervention" in the VHL and SciELO databases and by the English descriptors "smoking cessation program" OR "smoking cessation intervention" in the PubMed and PsycINFO databases. The terms were inserted separately in all bases only with the use of the Boolean operator OR, because in the

descriptors' use test stages a loss of articles was noticed when the "AND" operator was used. The inclusion criteria previously established were: (a) the material must necessarily be an empirical article published between 2002 and 2019 in Portuguese, English or Spanish; (b) the descriptors must be in the title, abstract or keywords; and (c) the text should exclusively refer to the SCP developed by INCA/MH and applied in Brazil. It was decided to exclude the articles that: (a) did not describe the effect of the smoker's treatment; (b) did not quantify the number of cigarettes smoked before and after participating in the treatment; and (c) presented online treatments because the SCP recommended by INCA/MS is intended to be applied in the face-to-face modality and the objective of the review was to evaluate the effect of that specific program and not of other smoking cessation treatments.

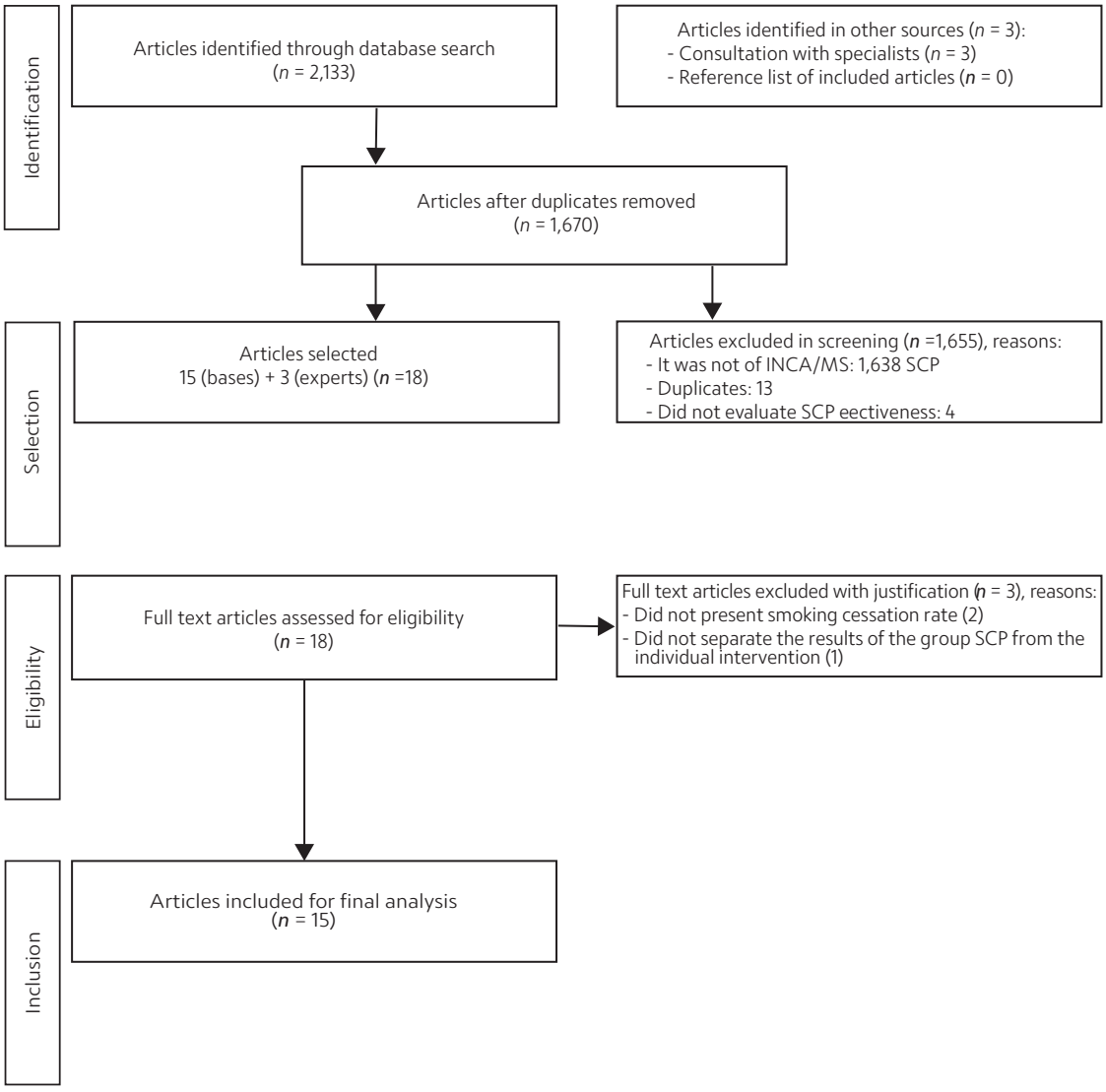
A total of 2133 articles was found with the application of the described high sensitivity search strategies. After excluding 463 studies identified as duplicates, 1670 were pre-selected for the screening stage, which was carried out by two judges who read the abstracts using resources of the Rayyan® tool, which allows two or more users to manage references independently (*blind on*) and compare them at the end of the process (*blind off*). Discrepancies were discussed with a third judge until a consensus was reached for the inclusion of 15 articles for the full-text reading stage. As additional sources, two specialists on smoking in Brazil were consulted, who suggested three studies that had not been found in the searches through the databases, and the reference lists of the texts included were reviewed, but no new article that fulfilled the eligibility criteria was identified. Thus, 18 studies passed to the full-text reading stage; two of those studies were excluded because they did not present a smoking cessation rate and one study because it did not present detailed results of the SCP used in a discriminated way in the group modality from those applied in the individual modality, yielding finally 15 studies for review. Figure 1 shows the diagram of the stage of search, studies' screening, and selection.

Results

The objectives, participants, instruments, and main results of the 15 studies selected for final analysis are presented in Table 1. The design used in said studies was descriptive, four of which were retrospective (they reviewed data from medical records and/or records on groups that occurred in previous months or years), six were cross-sectional (they reported only pre- and post-group evaluation data) and five longitudinal, with follow-up assessments ranging from one month to two years, as shown in Table 1. With regard to the assessment instruments, all the studies used sociodemographic and smoking history questionnaires, as well as the Fagerström Test for Nicotine Dependence (FTND). Some studies further used biological measurement devices such as monoximeter (device that measures the level of carbon monoxide in exhaled air) (Lopes et al., 2013, 2014), urine test (Figueiró et al., 2013), radiogram and spirometry (Sales et al., 2006). Studies that analyzed the relationship between the clinical profile and smoking used anxiety and depression measuring instruments, as well as others, as shown in Table 1.

Regarding the characterization of the samples, the studies usually reported data referring to the number of individuals included and the number of participants in session 1 and session 4 of the SCP, as presented in Table 1. The smallest samples of patients who completed the treatment presented data from specific groups, such as those of the outpatient clinic of a university hospital (n = 12; Rossaneis & Machado, 2011) or employees of a public transportation company (n = 16; Lopes et al., 2013). On the other hand, the largest sample (n = 4617; Santos et al., 2012) yielded data from the SCP offered by the SUS in 60 municipalities in the State of Minas Gerais.

Figure 1
Flowchart of the records of high sensitivity search steps



The SCPs participants assessed in the articles reviewed were mostly women, aged between 40 and 59 years, with a moderate to high level of nicotine dependence and with a mean number of 20 or more cigarettes smoked per day. Regarding the location, most of the studies (*n* = 9) were carried out in Primary Health Units (PHU); however, three studies reported data collection in hospital outpatient clinics (Mesquita, 2013; Pawlina et al., 2014; Rossaneis & Machado, 2011), two in universities as extension projects (Lopes et al., 2014; Santos et al., 2018) and one in a private company (Lopes et al., 2013).

The adherence rates of the 15 studies were quite varied, the lowest adherence reported being 33% (Figueiró et al., 2013) and the highest 100%. However, this highest adherence rate occurred in a SCP that took place in a company during the employees' working hours (Lopes et al., 2013). Regarding the calculation of treatment adherence rates, the study by Meier et al. (2012) used the number of enrolled individuals or those that participated in the screening interview in relation to the number of participants in session 4, while the others used the number of participants in session 1 as a reference.

Table 1

Studies general data on the effects of the INCA/MH/SCP included in the review

Authors / Year	Objective	Participants (N)	Instruments	Results
Figueiró et al. (2013)	To examine whether smokers who quit smoking showed changes in the intensity of nicotine addiction, in the motivational stage, or in the symptoms of anxiety and depression compared to smokers who had not quit smoking	- Enrolled = 183 - Session 1 = 163 - Session 4 = 54 - Adherence rate: 33% - Mean age 49 years - Women: 64% - FTND = Moderate - Mean cigarettes/day = NI	- FTND - URICA - Contemplation Ladder - BAI and BDI - Urine test (Cross-sectional)	- Out of the 54 full-time adherents, 20 (37%) quit or reduced tobacco use - No use of medication - Those who quit smoking exhibited higher scores in the maintenance stage in the Contemplation Ladder
Kock et al. (2017)	To evaluate the effectiveness of the SCP applied in a PHU in the city of Tubarão (SC).	- Enrolled = 130 - Session 1 = 106 - Session 4 = 73 - Adherence rate: 69% - Mean age 51 years - Women: 65% - FTND = 55% Moderate - Mean cigarettes/day = NI	- Sociodemographic Questionnaire: - FTND (Retrospective)	- Out of the 73 adherents, 55 (75%) quit smoking (the study reported a 51.9% success rate and not 75% because it considered the participants of Session 1) - Medication: 97% patch and 37% bupropion - Female who participated in less than 4 meetings had greater difficulty to quit smoking.
Krinski et al. (2018)	To evaluate the frequency and time of smoking cessation in SCP at a PHU in Porto Alegre/RS	- Enrolled = NI - Session 1 = NI - Session 4 = 38 (ex SCP participants) - Adherence rate: NI - Mean age 53 years - Women: 87% - FTND = 63% High - Mean cigarettes/day = NI	- Interview sociodemographic and smoking data. - Questionnaire on the group efficacy - FTND (Cross-sectional)	- Out of the 38 adherents, 20 (53%) quit smoking - Out of the 47% adherents who did not quit smoking, only 33.3% participated in the 4 meetings - In the interview (does not specify follow-up time) 10 out of the 20 (50%) continued not to smoke - 60.5% used medication.
Lopes et al. (2014)	To describe the implantation of SCP in a public university, including the evaluation of the dissemination methods, adherence rates and program success.	- Enrolled = 128 - Session 1 = 97 - Session 4 = 69 - Adherence rate: 71% - Mean age 47 years - Women: 69% - FTND = Moderate - Mean cigarettes/day = 20	- Monoximeter - FTND - Survey questionnaire on dissemination methods (Longitudinal)	- Out of the 69 adherents, 13 (19%) quit smoking and 29 (42%) reduced tobacco consumption - After 6 months, 13 (22%) out of the 58 individuals contacted were not smoking and 12 (21%) had reduced smoking - After 1 year, out of the 58 individuals contacted, 15 (26%) were not smoking and 21 (36%) had reduced smoking - No use of medication
Lopes et al. (2013)	To describe the application of SCP carried out in an urban public transport company that implemented the smoke-free environment policy	- Enrolled = 30 - Session 1 = 16 - Session 4 = 16 - 100% adherence rate (SCP offered during working hours) - Age: NI - Men: 100% - FTND = 50% High - Mean cigarettes/day = NI	- Monoximeter - FTND (30-day follow-up)	- Out of the 16 adherents, 7 (44%) had quit smoking and 9 (56%) had reduced their consumption - After 30 days, the same 7 adherents (44%) remained abstinent; however, only 5 out of the 9 adherents continued with smoking reduction. - No use of medication
Meier et al. (2012)	To analyze smoking treatment indicators in Cambé-PR.	- Enrolled = 92 - Session 1 = 63 - Session 4 = 48 - Adherence rate: 76% (Rate reported by the authors was 52%, considering those enrolled) - Mean age 50 years - Women: 62% - FTND = 65% High - Mean cigarettes/day = 20	- Sociodemographic questionnaire with tobacco history - FTND (Cross-sectional)	- Out of the 48 adherents, 32 (66.6%) quit smoking - 83.3% used medications.
Mesquita (2013)	To evaluate the effectiveness of SCP applied in a hospital, based on the guidelines of the National Cancer Institute (INCA).	- Enrolled = NI - Session 1 = 109 - Session 4 = 73 - Adherence rate: 67% - Mean age 43 years - Sex: NI - FTND = NI - Mean cigarettes/day = NI	- Registration form (personal data) - FTND (Longitudinal)	- Out of the adherents, 83,5% quit smoking - After one month, the abstinence rate remained 100% - After four months and six months the abstinence rate dropped by almost half. - All used nicotine patches and/or bupropion

Table 1
Studies general data on the effects of the INCA/MH/SCP included in the review

Authors / Year	Objective	Participants (N)	Instruments	Results
Pawlina et al. (2014)	To analyze the association between failure and the sociodemographic characteristics, smoking status, degree of motivation, and levels of anxiety, depression and stress in patients following a SCP in a Hospital and PHU in Cuiabá.	- Enrolled = 216 - Session 1 = 178 - Session 4 = 142 - Adherence rate: 79.8% - 62.5% aged between 40 59 years - Women: 65% - FTND = moderate/high - Mean cigarettes/day = 20	- Sociodemographic Questionnaire, - FTND - URICA - BAI and BDI - LSSI (Cross-sectional)	- Of the 142 adherents, 55 (38.5%) quit smoking - Therapeutic failure was associated with: young age group, shorter time smoking, greater smoking burden, low level of motivation and high level of anxiety. - All used nicotine patches and/ or bupropion
Pawlina et al. (2015)	To assess changes in the levels of anxiety, depression, motivation and stress in patients during the treatment for smoking cessation.	- Enrolled = 216 - Session 1 = 178 - Session 4 = 147 - Adherence rate: 82.5% - 63.4% aged between 40-59 years - Women: 70% - FTND = 69% High - Mean cigarettes/day = NI	- Sociodemographic questionnaire and tobacco history - URICA - BAI and BDI - LSSI and FTND (Cohort, 6-month follow-up)	- Out of the 147 adherents, 81 (55%) quit smoking - After 6 months, of the 142 individuals contacted, 81 (57.04%) continued not smoking. - There was an improvement in the levels of anxiety, depression, motivation and stress between the initial assessment and after 45 days and at the end of 6 months. - All participants used nicotine patches and/or bupropion
Rodrigues et al. (2016)	To assess the long-term effect of SCP and the factors associated with treatment success.	- Enrolled = 245 - Session 1 = NI - After 3 months = 84 - Adherence rate: NI - Mean age 50 years - Women: 73% - FTND = high - Mean cigarettes/day = NI	- Sociodemographic questionnaire and tobacco history - FTND - CAGE (Longitudinal)	- After 3 months, 34 (40.5%) of the 84 individuals evaluated were not smoking - After 6 months, 30 (35.7%) of the 84 individuals evaluated were not smoking - After 1 year, 26 (31.0%) of the 84 individuals evaluated were not smoking - After 2 years, 16 (19.0%) of the 84 individuals evaluated were not smoking - All used nicotine patches
Rossaneis & Machado (2011)	To identify the socioeconomic and clinical profile of patients assisted at the Tobacco Control Center of the Londrina State University Hospital Outpatient Clinic.	- Enrolled = NI - Session 1 = NI - Session 4 = 12 - Adherence rate: NI - Median age of 32 years - Men: 58% - FTND = 75% high - Mean cigarettes/day = NI	- Sociodemographic Questionnaire: - Clinical and smoking history - FTND - Hamilton Scale (Cross-sectional)	- Out of the 12 adherents, 8 (66.6%) quit and 4 (33.3%) reduced tobacco consumption - Clinical comorbidities were found in the group of people who were unable to quit smoking. - All smokers showed signs of depression, according to the Hamilton scale. - 50% used medication
Sales et al. (2006)	To evaluate the profile of patients and factors associated with treatment success performed in an outpatient hospital.	- Enrolled = NI - Session 1 = 320 - After 1 year = 258 - Adherence rate: NI - Mean age 48 years - Women: 65,6% - FTND = 78% moderate high - Mean cigarettes/day = 54% more than 20 cigarettes/ day	- Sociodemographic questionnaire, - Clinical and smoking history - FTND - Radiogram - Spirometry (Retrospective)	- After 1 year, 131 (50.8%) of the 258 participants contacted were not smoking, 46 (17.8%) relapsed and 51 (31.4%) had not quit smoking. - Medication: 68.4% used nicotine patches and 65.5% used bupropion.
Santos et al. (2018)	To identify the profile of smokers enrolled in the SCP of the Federal University of Triângulo Mineiro (UFTM) in Uberaba (MG) and list the factors associated with therapeutic success.	- Enrolled = NI - Session 1 = NI - Session 4 = 305 - Adherence rate: NI - Mean age 49 years - Women: 68,5% - FTND = 69% High - Mean cigarettes/day = 25.8	- Clinical evaluation (sociodemographic data and smoking history) - FTND (Retrospective)	- A high rate (84.6%) of treatment abandonment was observed - Out of the 305 adherents, 47 (15.4%) quit smoking - 52.1% used medication (paid by the participants)
Santos et al. (2012)	To assess effectiveness indicators of SCP offered by the Brazilian SUS Health System in 60 municipalities in the state of Minas Gerais.	- Enrolled = 7269 - Session 1 = 6304 - Session 4 = 4617 - Adherence rate: 73% - Mean age: NI - Gender: NI - FTND = NI - Mean cigarettes/day = NI	- Sociodemographic data - FTND - Motivational stage assessment (Retrospective)	- Out of the 4617 adherents, 3084 (67%) quit smoking - Over 60% used medication - The program was available in only 7.0% of the municipalities of Minas Gerais.

Table 1
Studies general data on the effects of the INCA/MH/SCP included in the review

3 of 3

Authors / Year	Objective	Participants (N)	Instruments	Results
Zancan et al. (2011)	To describe care with a focus on smoking cessation performed at a public health care center in Passo Fundo (RS)	- Enrolled = 47 - Session 1 = 38 - Session 4 = 23 - Adherence rate: 61% - Mean age: NI - Women: 76,6% - FTND = 25% moderate and 30% high - Cigarettes/day = 38% 11 to 20 and 40% more than 20	- Sociodemographic Questionnaire: - Smoking history - FTND (Cross-sectional)	- Of the 23 adherents, 15 (65%) quit smoking and 8 (35%) reduced tobacco consumption (In the original study, the percentiles presented are lower because they used participants' data in session 1 as a reference and not those in session 4, who concluded the treatment)

Note: BAI: Beck Anxiety Inventory; BDI: Beck Depression Inventory; CAGE: Cut Down, Annoyed, Guilty and Eye-opener; FTND: Fagerström Test for Nicotine Dependence; LSSI = Lipp's Stress Symptom Inventory for Adults; NI: No information; SCP: Smoking Cessation Program; URICA: University of Rhode Island Change Assessment.

In this review, for standardization purposes, the number of participants in session 1 in relation to session 4 was used as a reference for the adherence rate, considering adherence to the treatment program itself.

Regarding the outcome of the SCP, the rates of total success (abstinence) and partial success (cigarettes smoking reduction per day) also varied considerably. Among the 15 studies reviewed, the lowest success rate reported immediately after the intervention fluctuated from low (15.4% to 19.0%, in Santos et al., 2018 and Lopes et al., 2014, respectively), passing through moderate (37.0% to 55.0%, in Figueiró et al., 2013 and Pawlina et al., 2015, respectively), reaching a high 75.0% success reported by Kock et al. (2017) and 85.0% by Mesquita (2013). In studies with six months to two years follow-up, the rates were moderate, with 35.7% (Rodrigues et al., 2016) to 50.8% (Sales et al., 2006), or low, with 21.0% reported by Lopes et al. (2014).

Discussion

The SCP recommended by the INCA/MH was developed from studies on pharmacological and psychotherapeutic therapies and interventions that showed some positive effect in the treatment of smoking. It includes didactic material and is offered free of charge through the SUS system. However, despite having been applied since 2002 and generating costs for the government, no review study has been carried out to date to evaluate the efficacy and effectiveness of this program at the national level. Seeking to fill this gap, our critical review established as a criterion the inclusion of only research studies conducted in Brazil that report the application of the SCP according to the INCA/MH guidelines, which, as we mentioned before, yielded 15 studies which aspects related to the methodology were reviewed, including designs, sampling and assessment instruments; adherence and success rates; fidelity to the original program delivered; indicating limitations and potentials to improve it.

Regarding the characterization of the samples, there was a predominance of female participants and age group between 40 and 59 years (according to the studies identified in Table 1). These results corroborate the literature that reports the greater use of health services by females (Malta et al., 2017; Santos et al., 2019); in addition, the age group of patients seeking treatment is associated with the emergence of health consequences from smoking. Regarding the participants' gender and the location of the programs, the SCP offer only in the health units may have the consequence of reducing its reach of the main smoking audience i.e., the male patients. An alternative to this limitation is to carry out the program in spaces that men frequent the most,

such as companies – as carried out by Lopes et al. (2013), who obtained exclusive participation of men in the SCP in their study. Another strategy is the offer in universities, as done by Lopes et al. (2014) and Santos et al. (2018); such strategy also manages to reach young people who have not yet suffered much injury from tobacco consumption and helps in preventing the development of tobacco-borne diseases.

Considering the level of dependence of the participants, most studies found a predominance of moderate to severe degree of dependence and consumption of 20 or more cigarettes per day (Kock et al., 2017; Krinskiet al., 2018; Meier et al., 2012; Rossaneis & Machado, 2011; Sales et al., 2006; Santos et al., 2018). These results are similar to those found by Caram et al. (2009), for example, which highlight physical dependence associated with easy access to cigarettes and their repercussions on the smoker's participation in the program, considering that some studies associate treatment failure to the level of nicotine dependence (Haggstram et al., 2001). In fact, it is known that the longer the smoking behavior persists, the more associations with routine situations get established, which enhances the behavioral and psychological dependence and hinders adherence to and success of the intervention. Santos et al. (2018) also discussed the likelihood of a higher degree of dependence, even leading to more smoking-related illnesses, making the treatment process even more complex. Accordingly, one strong point of the treatment proposed by INCA/MH has the quality of treating the subjects in their entirety, with strategies aimed at the different types of dependence.

Regarding the designs, although only five of the 15 studies assessed reported follow-up data (from 1 to 24 months), there was a consensus among the authors regarding the need to incorporate the longitudinal design to monitor the participants in the long term. In fact, a six-month minimum follow-up is recommended by the INCA/MH as a basic component of the treatment approach, despite not being complied with in all the units. This recommendation is based on the high frequency of relapse rates after smoking cessation, especially in the first six months (Lopes et al., 2014; Mesquita, 2013; Rodrigues et al., 2016; Sales et al., 2006). An element that can be positively related to follow-up assessments, in addition to the benefits of supporting the participant, is the support of the participant's motivation to maintain abstinence, as suggested by Pawlina et al. (2014, 2015), with systematic face-to-face contact or by telephone.

In relation to the instruments applied before and after the SCP to assess its effect, some studies used biological measures such as radiogram, spirometry and the monoximeter (Lopes et al., 2013; Lopes et al., 2014; Sales et al., 2006), as well as self-reports. The self-report may not be a reliable measure due to factors such as social desirability, that is, when the participants seek to answer what they believe is expected and/or desired by the health team (Figueiró et al., 2013). Silva et al. (2016) considered it important to assess the participant in a broad way in terms of personal aspects, smoking history, degree of motivation for cessation and dependence reduction. In addition, they argued that other tests, such as chest radiography, electrocardiogram, complete blood count and spirometry, can be useful in raising smokers' awareness, as the tests can serve as a motivating factor for smoking cessation.

In a study on smoking treatment in patients with Chronic Obstructive Pulmonary Disease, Pessôa (2017) used spirometry and the monoximeter as complementary tests and pointed out that both tests, in addition to being useful from the physiological standpoint, consistently helped in increasing awareness of smoking issues and, consequently, in motivation. In this connection, the interaction established between the user and the health team throughout the process is an essential factor for treatment success (INCA, 2020b, 2020c). Therefore, it is important to clarify the use of these extra assessment measures, so that motivation is enhanced and not reduced with the false impression of an imposing posture or lack of confidence on the part of the team.

Regarding adherence to the SCPs, most of the studies reviewed compared the number of participants between the first and fourth session of the program, congruent with the evaluation of other similar studies (Nunes, 2017; Ribeiro, 2018). For the interpretation of results and for an easy performance of the effectiveness assessment among studies, it is important to standardize the way of measuring these data. The issue of adherence to treatment involves multifactorial aspects such as social vulnerability, educational barriers and association of tobacco with other psychopathologies (Rodrigues & Velozo Júnior, 2017), improvement on the part of professionals in the management and care of the smoker, as well as ambivalence and motivation for behavior change (Heck et al., 2020). The SCP provides, in its structure, the assessment of the degree of motivation of its participants (INCA, 2020b); however, among the 15 studies in this review, only four evaluated levels of motivation in their samples. Barbosa et al. (2020) found a positive relationship between motivation and the rate of smoking cessation and state that this level of readiness is a strong predictor of outcome. In this connection, Pereira et al. (2020) enhanced the importance of the family and group support, as well as professional advice, to increase motivation and, consequently, the chances of adherence and treatment success.

The evaluation of the programs' success rate was also a controversial point found in the studies in this review. Pawlina et al. (2014), for example, considered failure as the sum of the participants that did not attend the first session of the SCP, those who abandoned the treatment, and those who were not able to completely abstain from smoking. In other words, the study added issues related to dropout, abandonment and resistance to consider the failure of the program. Addressing the different variables related to treatment success, Nunes (2017) evaluated sociodemographic aspects, quantity of cigarettes smoked at the end of treatment and abandonment separately for a genuine analysis of the success rate, with these aspects being assessed separately.

A large number of variables can affect the adherence and success of the application of the SCP. A study carried out with the aim of investigating the reasons for abandoning this treatment identified factors such as: the relationship with the place where the program is developed, the type of therapy used, the sessions schedule and the professionals who provided advice (Meier et al, 2012). In view of this diversity of intervening variables, and so that the results can be discussed in a reliable manner, the importance of a specific analysis of the different factors that may influence the partial or total success of the SCP is emphasized.

Another relevant aspect in relation to the success of the SCP is the participation in all the therapeutic meetings proposed in the program. The results of the studies by Krinski et al. (2018) and Kock et al. (2017) showed a correlation between participation in the groups and a higher rate of smoking cessation. The study by Haggstram et al. (2001) showed high abstinence rates (49%) after the short time treatment and emphasized the patient's participation in the four sessions, as recommended by the INCA/MH. Accordingly, Baiotto et al. (2016) carried out a study on the effectiveness of a treatment for smokers and the results showed that failure to quit smoking was associated, among other aspects, with participation in fewer sessions of the therapeutic intervention. Hence, the data presented in the studies covered by our review added to other data in the literature highlight the importance not only of treatment adherence, but also of participation in the greatest possible number of sessions.

The analysis of the combined results of the articles that evaluated the effect of the SCP showed that not all the SUS units apply the treatment in a way that is faithful to the INCA/MH parameters. Fidelity is a multidimensional construct that represents the degree to which an intervention is implemented as planned (Hansen, 2014), which can be verified through studies of efficacy and

effectiveness carried out through the evaluation of results and the assessment of the process of implementing the intervention, respectively (Menezes & Murta, 2018). These types of studies are necessary for the improvement of the SCP, because, when evaluating the intervention effects, it can be understood how and why the Program achieves its goals or not, which contributes to ensure the reliability of the program's results and indicates weaknesses that must be reduced (Hansen, 2014). As these studies are not normally performed with view at the implementation of the SCP, the need to carry out all the pre and post-application actions and to comply with the entire protocol of the four sessions should be emphasized to minimize the interference of the fidelity variable bias in the implementation. The importance of maintaining fidelity to the model originally developed by the INCA/MH should be highlighted, since variations in its implementation may interfere with the program's results and distort data interpretation.

Conclusion

The present study systematically described the studies that applied the INCA/MH SCP in Brazil and highlighted the potential and limitations of this public policy. Considering the complexity and the multifactorial nature of smoking, the proposed intervention has the potential to treat the three types of tobacco addiction involved (psychological, behavioral and physical), seeking to address the disease in its entirety. This becomes a great challenge, since smoking behavior involves a habit formed and practiced for years associated with the smoker's routine (behavioral dependence), in addition to the pleasure triggered by the action of nicotine in the brain (physical dependence) and the reasons that elicit and maintain this behavior (psychological dependence). Therefore, even seemingly low rates of total success and partial success in the group treatment should also be valued in individual terms, as the positive impact on the life of each individual who succeeds in achieving and maintaining abstinence must be measured and valued. Focusing on integrated psychosocial treatment, the role of the psychologist within the health team in the SCP is emphasized, including his/her role as a multiplier, since the treatment protocol is based on the cognitive-behavioral approach.

The critical review methodology with a high sensitivity search was chosen in this study due to its usefulness for integrating information and providing an evidence summary of the studies that applied this intervention. Despite the application of a strict and systematic search method with view at including all studies that applied the SCP carried out in Brazil, one limitation may have been to leave out some study that fulfilled the eligibility criteria but that were not found in the databases used. In an attempt to remedy this failure, a smoking research specialist was consulted; as a result three additional studies were added that had not been found in the systematic search. However, when analyzing the references of all the studies included, none presented an article published in an indexed journal that was not already among those selected through searches in the databases. Therefore, it was possible to give visibility to a wide range of results and make a critical assessment of the information, suggesting future guidelines to improve the quality of the intervention. In order to take this study further, it is suggested that a systematic review be carried out to deepen the evaluation of the methodological quality, risk of bias and quality of evidence of studies that applied the SCP, since so far no evaluation studies on the efficiency and effectiveness of this program have been issued.

It is recommended that future groups undergoing the SCP follow the program as faithfully as possible as recommended by the INCA/MH. This includes: (a) conducting screening and sensitization interviews before the start of the group; (b) using the recommended assessment instruments (FTND and standardized and validated questionnaires) and, if possible, include some biological measure

in addition to the self-report; (c) conducting the four meetings with a pair of different specialties' health professionals whenever possible; (d) considering the subject in its entirety and not focusing only the medication treatment; and (e) carrying out maintenance follow-up for a minimum period of six months.

Finally, the need for more investment in the technical training of the SUS professionals who coordinate the SCP in different frameworks should be highlighted. This training should be geared to develop those professionals' awareness toward the faithful application of the program, as well as the provision of greater guidance and continuous monitoring by the municipal health departments for the adequate completion and use of the participants four-monthly data record spreadsheets. These spreadsheets, provided they are completed in full, are essential in providing support for the continuous improvement of the program and the consequent increase in its success rates.

References

Baiotto, C. S., Lorenz, C., Klein, D. L., & Colet, C. F. (2016) Avaliação da permanência dos usuários no Programa Nacional de Controle do Tabagismo no Centro Municipal de Saúde de Pejuçara (RS). *Revista Biomotriz, 10*(2), 35-50. https://revistaeletronica.unicruz.edu.br/index.php/biomotriz/issue/view/17

Barbosa, R. L., Givisiez, B. S., Fernandes, C. L., & Lichtenfels, P. (2020). Estão os participantes de grupos de cessação do tabagismo prontos a parar de fumar? Estudo sobre avaliação do nível motivacional em serviço de saúde comunitária. *Brazilian Journal of Development, 6*(10), 83604-83618. https://doi.org/10.34117/bjdv6n10-701

Caram, L. M., Ferrari, R., Tanni, S. E., Coelho, L. S., Godoy, I., Martin, R. S., & Godoy, I. (2009). Perfil de fumantes atendidos em serviço público para tratamento do tabagismo. *Jornal Brasileiro de Pneumologia, 35*(10), 980-985. https://doi.org/10.1590/S1806-37132009001000006

Figueiró, L. R., Bortolon, C. B., Benchaya, M. C., Bish, N. K., Ferigolo, M., Barros, H. M., & Dantas, D. C. (2013). Avaliação de mudanças na dependência da nicotina, motivação e sintomas de ansiedade e depressão em fumantes no processo inicial de redução ou cessação do tabagismo: estudo de seguimento de curto prazo. *Trends in Psychiatry and Psychotherapy, 35*(3), 212-220. https://doi.org/10.1590/S2237-60892013000300008

Haggstram, F. M., Chatkin, J. M., Cavalet-Blanco, D., Rodin, V., & Fritsher, C. C. (2001). Tratamento do tabagismo com bupropiona e reposição nicotínica. *Jornal de Pneumologia, 27*(5), 255-261. https://doi.org/10.1590/S0102-35862001000500005

Hansen, W. B. (2014). Measuring Fidelity. In Z. Sloboda & H. Petras (Eds.), *Defining Prevention Science* (pp. 335-357). Springer.

Heck, C., Diel, A. C. L., Matter, P., & Fortes, E. M. (2020). Grupos de cessação de tabaco desenvolvidos na Estratégia Saúde da Família. *Revista de Educação Popular, 19*(1), 246-257. https://doi.org/10.14393/REP-v19n12020-49971

Instituto Nacional de Câncer (2018). *Observatório da Política Nacional de Controle do Tabaco: doenças relacionadas ao tabagismo*. https://www.inca.gov.br/observatorio-da-politica-nacional-de-controle-do-tabaco/doencas-relacionadas-ao-tabagismo

Instituto Nacional do Câncer (2020a). *Alerta do Instituto Nacional de Câncer José Alencar Gomes Da Silva sobre os riscos do tabagismo e do uso e compartilhamento do narguilé para infecção pelo Coronavírus (Covid-19)*. https://www.inca.gov.br/sites/ufu.sti.inca.local/files/media/document/inca-alerta-tabagismo-uso_de_naguile-risco-infeccao-pelo-coronavirus.pdf

Instituto Nacional de Câncer. (2020b). *Programa Nacional de Controle do tabagismo, tratamento do tabagismo*. https://www.inca.gov.br/programa-nacional-de-controle-do-tabagismo/tratamento

Instituto Nacional de Câncer. (2020c). *Custos atribuíveis ao tabagismo*.https://www.inca.gov.br/observatorio-da-politica-nacional-de-controle-do-tabaco/custos-atribuiveis-ao-tabagismo

Kock, K. S., Arantes, M. W., Santos, C. C., & Castelini, S. S. (2017). Efetividade do programa de controle ao tabagismo em uma cidade do sul do Brasil. *Revista Brasileira de Medicina de Família e Comunidade, 12*(39), 1-10. https://doi.org/10.5712/rbmfc12(39)1562

Krinski, B. M., Faustino-Silva, D. D., & Schneider, M. (2018). Grupo de cessação de tabagismo na atenção primária à saúde: experiência de uma unidade de saúde de Porto Alegre/RS. *Revista de APS, 21*(1), 66-76. https://doi.org/10.34019/1809-8363.2018.v21.15867

Lopes, F. M., Peuker, A. C., & Bizarro, L. (2013). Aplicação de um Programa de Cessação do Tabagismo com Rodoviários Urbanos. *Psicologia: Ciência e Profissão, 33*(2), 490-499. https://doi.org/10.1590/S1414-98932013000200017

Lopes, F. M., Peuker, A. C., Rech, B. E., Gonçalves, R., & Bizarro, L. (2014). Desenvolvimento, divulgação, adesão e eficácia de um Programa de Cessação do Tabagismo oferecido em uma universidade pública. *Cadernos Terapia Ocupacional da UFSCar, 22*, 5-15. https://doi.org/10.4322/cto.2014.025

Lopes, F. M., & Silveira, K. M. (2020). Efeito de Estratégias e Técnicas Cognitivo Comportamentais no Tratamento do Tabagismo. *Revista Brasileira de Terapias Cognitivas, 16*, 59-66. https://doi.org/10.5935/1808-5687.20200009

Malta, D. C., Bernal, R. Y., Lima, M. G., Araújo, S. S., Silva, M. M., Freitas, M. I., & Barros, M. B. (2017). Noncommunicable diseases and the use of health services: analysis of the National Health Survey in Brazil. *Revista de Saúde Pública, 51*(1). https://doi.org/10.1590/S1518-8787.2017051000090

Malta, D. C., Oliveira, T. P., Luz, M., Stopa, S. R., Silva Junior, J., & Reis, A. A. C. (2015). Tendências de indicadores de tabagismo nas capitais brasileiras, 2006 a 2013. *Ciência & Saúde Coletiva, 20*(3), 631-640. https://doi.org/10.1590/1413-81232015203.15232014

Meier, D. A., Secco, I. A., &Vannuchi, M. T. (2012). Análise de indicadores de programa de controle do tabagismo em município do norte do Paraná. *Ciência, Cuidado e Saúde, 11*, 129-137. https://doi.org/10.4025/cienccuidsaude.v10i5.17064

Menezes, J. C. L., & Murta, S. G. (2018). Adaptação Cultural de Intervenções Preventivas em Saúde Mental Baseadas em Evidências. *PSICO-USF, 23*, 681-691. https://doi.org/10.1590/1413-82712018230408

Mesquita, A. A. (2013). Avaliação de um programa de tratamento do tabagismo. *Revista Brasileira de Terapia Comportamental e Cognitiva, 15*(2), 35-44. https://doi.org/10.31505/rbtcc.v15i2.601

Nunes, M. L. (2017). *Implantação do programa nacional de controle ao tabagismo na cidade de balsas maranhão* [Dissertação de Mestrado]. Centro Universitário Adventista de São Paulo. https://cdn1.unasp.br/mestrado/saude/2020/12/08115427/DISSERTACAO-1-MARIA-LUIZA.pdf

Pawlina, M. M., Rondina, R. C., Espinoza, M. M, & Botelho, C. (2014). Ansiedade e baixo nível motivacional associados ao fracasso na cessação do tabagismo. *Jornal Brasileiro de Psiquiatria, 63*(2), 113-20. https://doi.org/10.1590/0047-2085000000014

Pawlina, M. M. C, Rondina, R. C., Espinoza, M. M, & Botelho, C. (2015). Depressão, ansiedade, estresse e motivação em fumantes durante o tratamento para a cessação do tabagismo. *Jornal Brasileiro de Pneumologia, 41*(5), 433-439. https://doi.org/10.1590/S1806-37132015000004527

Pereira, M. O., Assis, B. C., Gomes, N. M., Alves, A. R., Reinaldo, A. M., &Beinner, M. A. (2020). Motivation and difficulties to reduce or quit smoking. *Revista Brasileira de Enfermagem, 73*(1), e20180188. https://doi.org/10.1590/0034-7167-2018-0188

Pessôa, C.L.C. (2017). Tratamento do tabagismo em pacientes com DPOC. *Pulmão RJ, 26*(1), 33-38. http://www.sopterj.com.br/wp-content/themes/_sopterj_redesign_2017/_revista/2017/n_01/08-artigo.pdf

Portes, L. H., Machado, C. V., & Turci, S. R. B. (2018). Trajetória da política de controle do tabaco no Brasil de 1986 a 2016. *Cadernos de Saúde Pública, 34*(2), e00017317. https://doi.org/10.1590/0102-311X00017317

Ribeiro, D. B. C. (2018).*Avaliação do Programa Nacional de controle do tabagismo em São Luís* [Dissertação de Mestrado]. Escola Superior de Tecnologia da Saúde de Coimbra. https://comum.rcaap.pt/handle/10400.26/25230

Rodrigues, N. C., Andrade, M. K., O'Dwyer, G., Daumas, R. P., Neves, R. D., Pereira Neto, A. P., Dutra, M. C., Gerardi, A., & Lino, V. T. (2016). Long-term effects of smoking cessation support in primary care: results of a two-year longitudinal study in Brazil. *Jornal Brasileiro de Psiquiatria, 65*(2), 174-178. https://doi.org/10.1590/0047-2085000000120

Rodrigues, B. J. C., & Velozo Júnior, O. (2017). Intervenções com grupos e tabagismo: Relato de experiência no contexto do sistema único de saúde brasileiro sobre as dificuldades de adesão ao tratamento.

Única Cadernos Acadêmicos, 3(3), 1-15. http://co.unicaen.com.br:89/periodicos/index.php/UNICA/article/view/60

Rossaneis, M. A., & Machado, R. C. (2011). Cessação do tabagismo em pacientes assistidos em um ambulatório de tratamento de dependência do tabaco. *Ciência, Cuidado e Saúde, 10*(2), 306-313. https://doi.org/10.4025/cienccuidsaude.v10i2.15688

Sales, M. P., Figueiredo, M. R., Oliveira, M. I., & Castro, H. N. (2006). Ambulatório de apoio ao tabagista no Ceará: perfil dos pacientes e fatores associados ao sucesso terapêutico. *Jornal Brasileiro de Pneumologia, 32*(5), 410-417. https://doi.org/10.1590/S180637132006000-500007

Santos, S. R., Bitencourt, A. R., Engel, R. H., Silva, M. H., Stacciarini, T. S., & Cordeiro, A. L. (2018). Perfil e fatores associados ao sucesso terapêutico de tabagistas atendidos em um serviço público especializado. *Revista Enfermagem UERJ, 26*, 1-7. https://doi.org/10.12957/reuerj.2018.17381

Santos, J. D., Duncan, B. B., Sirena, S. A., Vigo, A., & Abreu, M. N. (2012). Indicadores de efetividade do Programa de Tratamento do Tabagismo no Sistema Único de Saúde em Minas Gerais, Brasil, 2008. *Epidemiologia e Serviços de Saúde, 21*(4), 579-588. http://dx.doi.org/10.5123/S1679-49742012000400007

Santos, C. B., Scortegagna, S. A., Franco, R., &Wibelinger, L. M. (2019). Variáveis clínicas e razões para busca de tratamento de pacientes tabagistas. *SMAD Revista Eletrônica Saúde Mental Álcool e Drogas, 15*(2), 77-86. https://doi.org/10.11606/issn.1806-6976.smad.2019.149180

Silva, L. C., Araújo, A. J., Queiroz, A. A., Sales, M. P., & Castellano, M. V. (2016). Controle do tabagismo: desafios e conquistas. *Jornal Brasileiro de Pneumologia, 42*(4), 290-298. https://doi.org/10.1590/s1806-37562016000000145

Silveira, K. M., Assumpção, F., Andrade, A. L. M., De Micheli, D., & Lopes, F. M. (2021). Relação das dependências física, psicológica e comportamental na cessação do tabagismo. *Contextos Clínicos, 14*(2), 540-562. https://doi.org/10.4013/ctc.2021.142.08

Teixeira, L. A., Paiva, C. H., & Ferreira, V. N. (2017). Convenção-Quadro para o Controle do Tabaco da OMS da agenda política brasileira, 2003-2005. *Caderno de Saúde Pública, 33*(3), e00121016. https://doi.org/10.1590/0102-311x00121016

World Health Organization. (2019). *WHO report on the global tobacco epidemic - Offer help to quit tobacco use*. https://www.who.int/publications/i/item/9789241516204

Zancan, N., Colognese, B. T., Ghedini, F., & Both, T. (2011). Intervenções Psicológicas em Grupos de Controle de Tabagismo: relato de experiência. *Revista de Psicologia da IMED, 3*(2), 534-544. https://doi.org/10.18256/21755027

Contributors

F. M. LOPES was responsible for the conception, design, analysis and interpretation of data, discussion of results and review and approval of the final version of the article. C. A. MORAES and G. RODRIGUES participated in the collection, analysis and interpretation of data and discussion of the results. L. CARDOZO, J. BEZERRA and K. SZUPSZYNSKI participated in the writing of the introduction, analysis and interpretation of data, discussion of results and review and approval of the final version of the article.