doi: http://dx.doi.org/10.11606/issn.1679-9836.v101i3e-188696 Rev Med (São Paulo). 2022 May-June;101(3):e-188696.

Efficacy of a hospital protocol for post-discharge smoking cessation: a longitudinal study

Eficácia de um protocolo hospitalar para cessação do tabagismo no pós-alta: um estudo longitudinal

Lígia Menezes do Amaral[1], Rafaela de Oliveira Andrade[2], Isabella Oliveira Lanzieri[3], Kimber P. Richter[4], Ângela Caroline Dias Albino Destro de Macêdo[5], Isabel Cristina Gonçalves Leite[6]

Amaral LM; Andrade RO; Lanzieri IO, Richter KP; Macêdo ACDAD, Leite ICG. Efficacy of a hospital protocol for post-discharge smoking cessation: a longitudinal study / *Eficácia de um protocolo hospitalar para cessação do tabagismo no pós-alta: um estudo longitudinal.* Rev Med (São Paulo). May-June;101(3):e-188696.

ABSTRACT: *Introduction*: In the national literature, there is still a shortage of studies which evaluate hospital interventions to promote smoking cessation. ***Objective***: To evaluate the effectiveness of a hospital smoking cessation protocol in promoting cessation, according to the degree of nicotine dependence. *Methods*: This longitudinal study evaluated 146 hospitalized smokers and divided them into two groups according to their degree of nicotine dependence. During hospitalization, patients received motivational/behavioral counseling, printed educational materials, and nicotine replacement therapy for 30 days. Post-discharge, patients received weekly telephone calls for one month. *Results*: Ninety-two participants (63%) had an FTND score ≥ 5 indicating higher levels of nicotine dependence. Depression and anxiety were significantly more prevalent in the more dependent group (p=0,018). The least dependent group had higher self-efficacy (0-worst to 10-best) compared to the more dependent group (median of 8 and 6 respectively, p = 0.008). Cessation one month after discharge was nearly three times higher in the least dependent group, in comparison to the more dependent group (p = 0.001). *Conclusions*: In the sample studied, patients more dependent on nicotine exhibited higher depression/anxiety and lower self-efficacy—elements that negatively influence the achievement of cessation. Smoking cessation rates were much lower in the more dependent group. Strategies that increase self-efficacy and address mental disorders could focus on underlying risks that hinder cessation among patients with higher nicotine dependence. A structured protocol favors the achievement of cessation in hospitalized patients.

Keywords: Tobacco; Tobacco use cessation; Hospitalization; Counseling; Patient discharge.

RESUMO: *Introdução:* Na literatura nacional, são escassos os trabalhos que avaliam intervenções hospitalares para promoção da cessação do tabagismo. *Objetivo:* Avaliar a eficácia de um protocolo hospitalar na promoção da cessação do tabagismo segundo grau de dependência nicotínica. *Método:* Estudo longitudinal realizado em hospital universitário, com 146 participantes divididos em dois grupos segundo grau de dependência à nicotina. Ambos receberam abordagem motivacional, material informativo, terapia de reposição de nicotina (quando indicado) e ligações telefônicas semanais por 30 dias pós alta. *Resultados:* Noventa e dois participantes (63%) apresentaram maior dependência nicotínica (Fagerström ≥ 5). Os sintomas de ansiedade e depressão foram mais frequentes no grupo de maior dependência (p=0,018). A autoeficácia, foi maior no grupo com menor dependência (p = 0,008). O percentual de cessação um mês após a alta foi três vezes maior nos pacientes com menor dependência (p = 0,001). *Conclusão:* Os resultados reforçam que as estratégias devem ser aprimoradas para pacientes com maior dependência e que um protocolo estruturado favorece o alcance da cessação em pacientes hospitalizados.

Palavras-chave: Tabaco; Abandono do uso de tabaco; Hospitalização; Aconselhamento; Alta do paciente.

1. Universidade Federal de Juiz de Fora, Faculdade de Medicina, Departamento de Clínica Médica. https://orcid.org/0000-0001-9795-6698. E-mail: ligia.amaral2013@gmail.com.
2. Universidade Federal de Juiz de Fora, Faculdade de Medicina. https://orcid.org/0000-0001-5460-7199. E-mail: rafaandradee@gmail.com
3. Universidade Federal de Juiz de Fora, Faculdade de Medicina. https://orcid.org/0000-0003-1272-2193. E-mail: isabellalanzieri1@gmail.com
4. Universidade de Kansas, Faculdade de Medicina, Departamento de Medicina Preventiva e Saúde Coletiva. https://orcid.org/0000-0002-035-4336. E-mail: krichter@kumc.edu
5. Universidade Federal de Juiz de Fora, Faculdade de Medicina. https://orcid.org/0000-0002-5280-9157. E-mail: angeladiasmacedo19@gmail.com
6. Universidade Federal de Juiz de Fora, Faculdade de Medicina, Departamento de Saúde Coletiva. https://orcid.org/0000-0003-1258-7331. E-mail: isabel.leite@ufjf.edu.br

Correspondence: Universidade Federal de Juiz de Fora, Faculdade de Medicina, Departamento de Clínica Médica. https://orcid.org/0000-0001-9795-6698. E-mail: ligia.amaral2013@gmail.com. Endereço para correspondência: Av. Eugênio do Nascimento, s/n° - Dom Bosco, Juiz de Fora – MG

INTRODUCTION

The percentage of adult smokers in Brazil has shown a significant drop in recent decades, due to the numerous actions developed by the National Policy on Tobacco Control. Considering the period from 1989 to 2010, the drop in the percentage of smokers in Brazil was of 46%, and it is estimated that a total of about 420,000 deaths were avoided in this period[1].

The approach with the goal of motivating cessation should occur on every occasion of interaction with the patient who smokes. Hospitalization offers a precious opportunity for smoking cessation, as hospitals are tobacco-free areas where patients are required to remain abstinent during the period of hospitalization. Another reason that favors cessation is the clinical situation that motivated hospitalization, often related to smoking itself, which is capable of increasing the patient's motivation to quit smoking[2-5].

Patients with coronary insufficiency who continue to smoke after revascularization, whether percutaneous or surgical, have high mortality when compared to those who stop smoking[6]. A retrospective cohort study, published in 2015, concluded that tobacco use by patients with peripheral arterial disease substantially increased hospitalizations, as well as coronary diseases and procedures related to peripheral vascular disease[7].

In addition, it is assumed that professionals and resources capable of promoting cessation are available in the hospital setting[8]. However, in Brazil, only a few hospitals have a health team prepared to offer interventions in an adequate and systematic way to smokers[9-11].

For the treatment of hospitalized smokers to take place, it is necessary to train professionals, who, within the hospital routine, approach patients, encouraging counseling, interventions that promote motivation, behavioral treatment and pharmacological treatment. The follow-up of patients after discharge, for a minimum period of 30 days, is also essential to maintain the effectiveness of interventions initiated in the hospital[12]. In the national literature, there are still few studies that assess the effectiveness of interventions to promote smoking cessation in hospitals[10].

The Interdisciplinary Center for Research and Interventions in Tobacco Use (CIPIT) of the University Hospital of the Federal University of Juiz de Fora (HU-UFJF) developed a protocol for the care of hospitalized smokers. It establishes approaches for the hospitalization period and for the post-discharge period and was based on treatments with scientific evidence already demonstrated in the literature[12-16].

The present study aims to evaluate the effectiveness of a hospital protocol in promoting smoking cessation in patients post-discharge, according to the degree of nicotine dependence.

METHODS

This is a longitudinal study, based on the admission registration system of a university hospital.

The study was conducted in the city of Juiz de Fora, a municipality located in the Zona da Mata of the state of Minas Gerais, Brazil, with an estimated population of 564,310 inhabitants. According to data from Vigitel-2017[17], the total percentage of smokers over 18 years of age in Brazil is of 10.1%, thus, it is estimated a total of 52,142 smokers in the municipality of Juiz de Fora in the aforementioned age group. Participants were recruited among patients hospitalized at the HU-UFJF.

The HU-UFJF integrates the health region of Juiz de Fora, Lima Duarte, Bom Jardim Minas, covering 25 municipalities, approximately 651,626 inhabitants, a projection based on the 2010 Census. The HU currently has a structure composed of 03 units: inpatient unit, outpatient care unit and the Psychosocial Care Center (CAPS). It has 59 offices and 159 hospital beds, of which 9 are in the Intensive Care Unit.

Sample

The sample size was calculated in 146 patients for a significance level of 95%, and admitting a 6% margin of error. The study sample consisted of smokers admitted for treatment of various clinical or surgical conditions, hospitalized at the HU-UFJF, who accepted the approach and interventions initiated at the hospital and the continuity of interventions after discharge. The study period was from January 2018 to February 2019.

The inclusion criteria were: being over 18 years of age and having smoked industrialized or artisanal cigarettes in the last thirty days, even a single puff[18]. All patients who met the eligibility criteria in the aforementioned period were approached.

Patients who did not consent to proceed with the post-discharge approach, who could not be reached by telephone, those without cognitive conditions, those unable to participate due to their clinical condition and patients quarantined or admitted to the intensive care unit were excluded from the study.

The study was approved by the Research Ethics Committee of the HU-UFJF under protocol number 1,460,247, in 2016.

Sample protocol

The approach protocol was developed and applied by the CIPIT team, in partnership with the researchers, who participated in all stages of the approach. The service promotes the HU-UFJF as a tobacco-free environment, as well as promotes interventions for smoking cessation, trains health professionals in the best practices for treating smokers and develops research in the area. The doctors and

nurses who coordinate it received training by the municipal coordination of tobacco control, the Service for Control, Prevention and Treatment of Tobacco Use (SECOPTT)[19].

A list of patients admitted in the last 24 hours was generated daily through the hospital's electronic medical record program (AGHU). In possession of this list, the team members promoted the active search for smokers.

Once identified, the smokers underwent an interview with sociodemographic data collection and received two counseling sessions, lasting approximately 15 and 30 minutes, respectively, both preferably carried out on the first day of hospitalization and using a questionnaire standardized by the team. In the first session, smoking history was evaluated, including degree of nicotine dependence using the Fagerström test, motivation for quitting, previous quit attempts, age of smoking initiation and tobacco load[20]. Alcohol consumption, the presence of symptoms of depression and anxiety, and the degree of craving using an analogue scale from 0 to 4 were also evaluated.

Patients received, as part of the first approach, informative printed material, developed by the National Cancer Institute (INCA) and distributed by the Ministry of Health. The information that the hospital is a tobacco-free area was also reinforced, and the use of tobacco products on its premises was prohibited.

A second approach was offered, using behavioral therapy strategies and motivational interviewing. Patients were visited by a team doctor who evaluated the indication or contraindications for pharmacological therapy for smoking and established the drug strategy for each case. The HU-UFJF smoking program provided nicotine replacement therapy (NRT) in the presentation of 21, 14 and 7 mg patches, in addition to 2 mg gum. Medications were offered for a period of 30 days to patients who intended to remain abstinent after discharge, and who agreed to use the medication. The participants were then informed that they would be contacted by the team after discharge, and instructed to seek a primary care unit to continue the pharmacological treatment.

After discharge, patients received phone calls once a week for a period of 30 days, in which a motivational/behavioral approach was offered with reinforcement of strategies for smoking cessation, with emphasis on increasing self-efficacy, resolving ambivalence, encouraging new behaviors and avoiding thoughts that favor resistance. In this context, the health professional sought to facilitate smokers' access to available resources for cessation, identify possible barriers to cessation and work on them in order to overcome them, informing about the importance of self-monitoring attitudes and relapse prevention. The follow-up of the patients was carried out by telephone calls 30 days after discharge, using a questionnaire standardized by the team, in order to verify the patient's smoking status, lapses or relapses, and motivation for further attempts to quit. Patients who did not follow-up were considered as treatment failure and active smokers for data analysis.

Measures

The primary endpoint was self-reported occasional abstinence (abstinence in the last 7 days assessed in a follow-up phone call 30 days after discharge) while secondary endpoints were assessed for continuous abstinence (abstinence since discharge assessed at 30-day follow-up), the use of medication after discharge and the follow-up of smoking cessation treatment in other parts of the public health system. Participants were evaluated according to the degree of nicotine dependence using the Fagerström test, a scale in which a result lower than 5 demonstrates very low or low dependence and a result greater than or equal to 5 demonstrates medium, high or very high dependence[21]. Thus, in this study, those who presented a Fagerström test result <5 were classified as less dependent patients and those who presented Fagerström ≥5 were classified as more dependent. The presence of symptoms of depression and anxiety was also evaluated using the PHQ4[22], alcohol consumption using the Audit C[23,24], self-efficacy, which concerns confidence in the process of change, and was evaluated on a visual analogue scale from 0 to 10, where 0 is no confidence in achieving cessation and 10 is maximum confidence, and the degree of craving by analog scale from 0 to 4 (Minnesota Nicotine Withdrawal Scale). On this scale, 0 meant no desire to smoke and 4 intense desire to smoke at the time of the interview[25].

Statistical analysis

Descriptive analysis was presented as mean and standard deviation or as median and interquartile range for variables with normal and non-parametric distribution, respectively. The difference between the groups was evaluated by the chi-square test for categorical variables and by the t test or Mann-Whitney test for continuous variables, according to their distribution. Analyzes were performed using the SPSS Statistics program, version 20.0 for Windows (IBM Corporation, Armonk, NY, USA). P values < 0.05 were considered significant.

RESULTS

A total of 302 smokers were admitted to the HU-UFJF, during the study period, 217 patients met the inclusion criteria. Given the limited availability of nicotine replacement therapy, 146 patients were randomly selected from the sample. The remaining 71 subjects received the educational approach and motivational therapy and were not included in the study. Figure 1 illustrates the flowchart of the study participants.

According to the degree of nicotine dependence, 54 (37%) participants were less dependent, with a Fagerström test score < 5, while 92 (63%) had a Fagerström test score ≥ 5, showing, therefore, greater nicotine dependence.

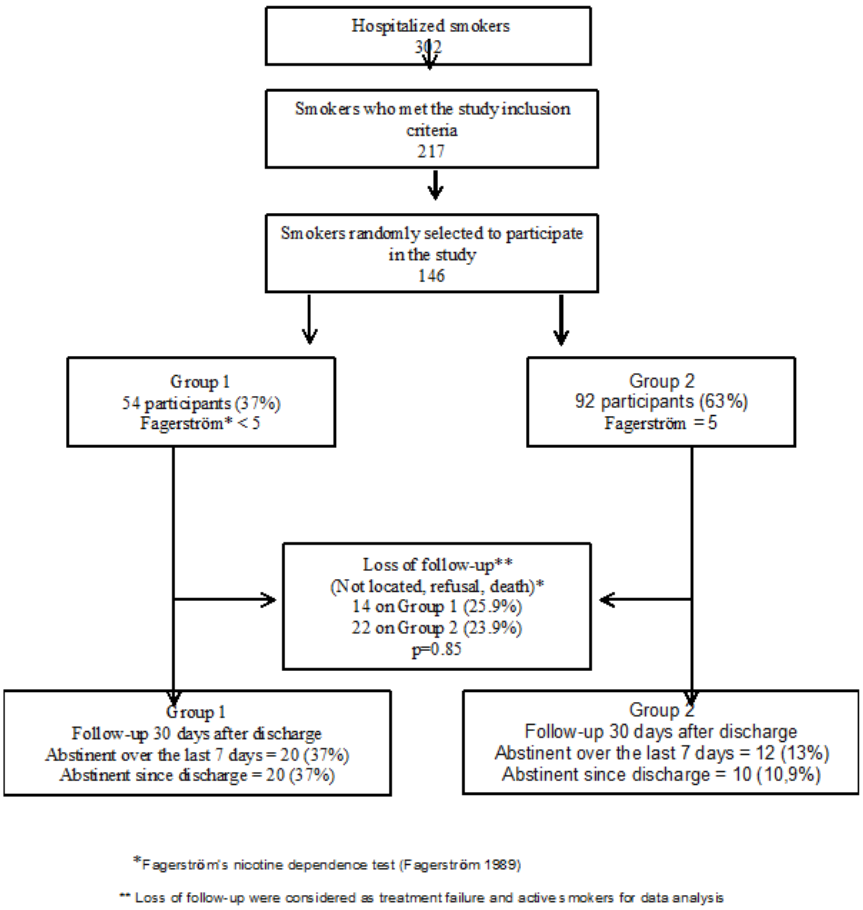

Figure 1 – Flowchart of the study participants

Regarding sociodemographic data, no significant difference was observed between the profile of participants with less or greater dependence on nicotine. Table 1 describes the sociodemographic data of the study. Most participants (49.1%) belonged to social class C of the Abep[26], declared themselves to be non-white in 63.3% of the cases, and 71.4% of the participants declared they had not completed elementary school. There was no difference in age at smoking initiation. The distribution of the sample between females and males was homogeneous, 74 (50.7%) and 72 (49.3%) respectively, and no difference was observed in relation to the degree of dependence between genders. The mean age of patients was of 50.03 years (SD ± 14).

For the findings related to anxiety and depression, 28.3% of the group with Fargeström < 5 had a PHQ-4 score ≥ 6, indicative of moderate to severe anxiety/depression disorders. This percentage was higher in the group with greater nicotine dependence (Fargeström ≥ 5), in which 51.7% of the participants achieved a score ≥ 6 (p = 0.018). There was no difference between the groups with regard to harmful use of alcohol. The findings are described in Table 2.

Table 3 presents the level of motivation and cessation attempts of those approached. There was no difference between the groups in terms of cessation attempts in the last year, 57% of the participants denied having been able to stop smoking, even for 24 hours. The percentage of subjects who intended to quit smoking after discharge in both groups stands out (96.25% and 100%, p = 0.138).

Regarding the concepts of importance and self-efficacy, discussed in the motivational interview[27], there was no difference between the groups regarding the importance of quitting smoking (p = 0.687). On the other hand, it was observed that the group with low dependence had a greater perception of self-efficacy compared to the group with greater dependence (median of 8 and 6, p = 0.008).

Table 1. Sociodemographic characteristics of the sample according to the degree of nicotine dependence, Juiz de Fora, MG, Brazil.

Variables	Sample total	Fagerström ≥ 5		p
		n	%	
Age (mean and SD)	49,88 ± 14,08	49,17	± 1,31	0,108
Ethnic-racial group				0,418
White	51	33	37,9	
Others	88	54	62,1	
Gender				0,899
Male	72	45	48,9	
Female	74	47	51,1	
Civil status				0,155
Has a partner	46	33	37,9	
Does not have a partner	91	54	69,1	
Education				0,760
Incomplete middle school / illiterate	80	50	73,5	
Middle school	24	13	19,1	
High school and higher education	8	5	7,4	
Classification according to ABEP				0,416
A+B	26	15	22,7	
C	54	30	45,5	
D+E	30	21	31,8	
Age started smoking (mean and SD)	15,84 ± 6,37	16,12	± 1,33	0,652
Average number of cigarettes smoked per day (mean and SD)	15,63 ± 12,80	19,95	± 13,4	< 0,001

ABEP – Associação Brasileira de Empresas de Pesquisa (Brazilian Association of Research Companies); SD – standard deviation

Table 2. Anxiety, depression and alcohol abuse according to the degree of nicotine dependence, Juiz de Fora, MG, Brazil.

Variables	Sample total	Fagerström ≥ 5		p
		n	%	
PHQ-4 *				
None (0-2)	46	21	23,6	0,018
Mild (3-5)	35	22	24,7	
Moderate (6-8)	27	21	23,6	
Severe (9-12)	34	25	28,1	
*AUDIT C*_#				
Low risk	94	58	76,3	0,868
Moderate to severe risk	30	18	23,7	

* Patient Health Questionnaire-4 Item (PHQ-4)

Alcohol Use Disorder Identification Test (AUDIT C)

Table 3. Attempts and motivation for cessation, according to degree of nicotine dependence, Juiz de Fora, MG, Brazil.

Variables	Sample	Fagerström ≥ 5		p
		n	%	
***Cessation** attempts in the last year*				
Yes	57	32	35,6	0,083
No	81	56	62,2	
Did not know	4	2	2,2	
Use of medication in an attempt to quit in the past				
No	99	61	69,3	0,151
Yes	37	27	30,7	
Do you want to quit smoking?				
Yes	137	87	100,0	
No	2	0	0,0	0,138
Do you plan to try to stop or decrease your cigarette consumption in the next 30 days?				
Yes	140	89	100	0,052
No	3	0	0,0	
Post-discharge planning				
Continue smoking cessation when leaving the hospital	112	67	74,4	
Quit smoking when leaving the hospital	8	8	8,9	0,067
Don't know if you're going to stop smoking	3	2	2,2	
Reduce cigarette consumption	19	13	14,4	
Don't plan to quit smoking	2	0	0,0	

Table 4 presents the primary and secondary outcomes. The group with greater dependence on nicotine had a higher percentage of medication use after discharge when compared with the less dependent group (39.5% and 7.9%, p = 0.001). A minority of participants followed-up with the smoking treatment, after discharge, in the primary or secondary health care network (19.5%), with no difference between the groups. The least dependent group reported abstinence (not even a puff) in the last 7 days at a rate of 37% at the 30-day follow-up, while in the most dependent group this proportion was of 13% (p = 0.001). The difference between the groups also occurred in relation to the report of continuous abstinence (abstinence since discharge in the 30-day follow-up) with 20% abstinent in the lowest dependence group and 10% in the highest dependence group (p ≤ 0.001). In the final model of logistic regression, the PHQ4 score remained associated with the degree of dependence (ORaj 5.63; CI 1.21-26.1). Loss of follow-up in the 30-day post-discharge follow-up occurred in 43.8% of the sample, selectively between groups, since 29.6% of the individuals in the lower dependence group were not reached, whereas 52% in the group with greater nicotine dependence (p=0.04).

Table. Medication use, treatment follow-up in primary/secondary care and abstinence at 30 days follow-up after discharge, according to degree of nicotine dependence, Juiz de Fora, MG, Brazil.

Variables	Sample total	Fagerström ≥ 5		p
		n	%	
Use of medication after discharge				
Yes	20	17	39,5	< 0,001
No	61	26	60,5	
Continued treatment in primary/secondary care				
Yes	16	11	25,0	0,142
No	66	33	75,0	
Abstinent in the last 7 days				
No	114	80	87,0	< 0,001
Yes	32	12	13,0	
Abstinent in the last 30 days				
No	116	82	89,1	< 0,001
Yes	30	10	10,9	

DISCUSSION

The cessation percentages found in our study are equivalent to those presented in studies recently published in the literature, which also offered an approach to the smoker during hospitalization and post-discharge and evaluated occasional and continuous cessation outcomes one month after discharge. The follow-up of patients after discharge, as in our study, also took place in a non-face-to-face manner through communication technologies such as telephone calls, interactive voice messages or internet sites[8,12,28,29].

Our study found a significant difference in the percentage of cessation between the two groups evaluated, those with Fagerström < 5, and therefore less dependence, presented better results. Regarding the differences found between the groups, the lowest self-efficacy in the group with greater dependence stands out. Self-efficacy is seen as the patient's confidence in their ability to remain abstinent. Both conditions: greater dependence on nicotine and low self-efficacy are described in the literature as predictors of failure in smoking cessation[30,31].

Another difference presented by the study groups was in relation to findings of mental disorders such as anxiety and depression, more prevalent in the group with greater dependence. Depression is also recognized in the literature as a predictor of failure to quit smoking. Depressed patients tend to be more dependent on nicotine and have greater difficulty in setting a date to quit smoking. Patients with depression have negative mood swings that interfere unfavorably with their cessation attempts[31,32].

In the present study, we observed that despite the desire to quit smoking after discharge, reported by most participants, few continued the treatment at other points of care in the public health network, and a small number continued to use the medication after discharge. This finding is supported by the literature, which reports that despite the robust organizational framework for tobacco control, the wide range of treatment is still a challenge. Overload of professionals in primary care and its high turnover are obstacles that impact the care of smokers in a continuous and broad way. Strategies that promote better coordination between the National Tobacco Control Program (PNCT) and primary care, an opportune setting for the implementation of tobacco control actions, should be studied[33].

As a limitation of our study, we highlight the drawbacks of cessation outcomes when assessed by self-report. However, in the assessment of abstinence in the first month after discharge, important studies on the subject used self-report to assess the outcome, in view of the difficulties in obtaining biochemical proof of abstinence[2,8,29,34,35]. The high number of post-discharge follow-up losses is another limitation. This limitation is similar to other longitudinal studies in this population[10,34,36]. Furthermore, it is believed that the selectivity of losses found in this study reflects a lower adherence of the group with greater nicotine dependence to the smoking cessation protocol after discharge.

As advantages of the present study, we highlight the evaluation of a cessation program for the hospitalized smoker patient according to the degree of nicotine dependence, through a systematic approach, including counseling and drug treatment. Post-discharge follow-up for a minimum period of 30 days is essential to maintain the effectiveness of interventions initiated in the hospital[12]. This treatment proposal for hospitalized smoking patients developed in a public hospital, a regional care center, can be adapted and adopted in other institutions in the country. By adopting a hospital treatment program for the smoking patient, the opportunities for cessation offered by hospitalization are optimized.

Patients with greater nicotine dependence had lower post-discharge cessation percentages, lower self-efficacy and more symptoms related to depression. Thus, the present study contributed to understanding smokers as a heterogeneous group, reinforcing the need for smoking cessation treatment in clinical practice to be guided in order to meet the peculiarities of the different subgroups, in particular those with greater dependency. Approaches that work on self-efficacy and that align smoking treatment with the treatment of mental disorders and alcohol abuse need to be a priority in interventions with hospitalized smokers.

There are still many challenges for approaching hospitalized smokers, among them we highlight the creation of services with structured care, post-discharge follow-up, better offer and promotion of adherence to pharmacological treatment, multidisciplinary approach, especially with the development of interventions for groups specific as those with mental disorders. Strategies need to be devised to overcome each of these obstacles, and thus take advantage of the valuable opportunity of hospitalization for smoking cessation.

Funding Agency: CAPES - Programa de Doutorado Sanduíche no Exterior – PDSE (Processo 88881.361525/2019-01) e CNPQ - Programa de Produtividade em Pesquisa (Processo 303229/2019-5).

Authors' contributions: 1: Conception and planning of the work, interpretation of evidence, data collection, writing, review of preliminary and definitive versions. 2: Conception and planning of the work, data collection, statistical analysis and writing. 3: Conception and planning of the work, data collection, statistical analysis. 4: review of preliminary and definitive versions and approval of the final version. 5: Design and planning of the work and data collection. 6: Conception and planning of the work, interpretation of evidence, statistical analysis, review of preliminary and definitive versions and approval of the final version.

REFERENCES

1. Instituto Nacional do Câncer. Programa Nacional de Controle do Tabagismo. Rio de Janeiro; 2018 [citado 23 jan. 2020]. Disponível em: https://www.inca.gov.br/programa-nacional-de-controle-do-tabagismo.
2. Rigotti NA, Tindle HÁ, Regan S, Levy DE, Chang Y, Carpenter KM, et al. A post-discharge smoking-cessation intervention for hospital patients. Am J Prev Med. 2016;51(4):597-608. http://dx.doi.org/10.1016/j.amepre.2016.04.005.
3. Azevedo RCS, Mauro MLF, Lima DD, Gaspar KC, Silva VF, Botega NJ. General hospital admission as an opportunity for smoking-cessation strategies: a clinical trial in Brazil. Gen Hosp Psych. 2010;32(6):599-606 http://dx.doi.org/10.1016/j.genhosppsych.2010.09.013.
4. Barreto RB, Pincelli MP, Steinwandter R, Silva AP, Manes J, Steidle LJM. Tabagismo entre pacientes internados em um hospital universitário no sul do Brasil: prevalência, grau de dependência e estágio motivacional. J Bras Pneumol. 2012;38(1):72-80. http://dx.doi.org/10.1590/S1806-37132012000100011.
5. Castellano MVCO. Opening windows of opportunity for smoking cessation treatment. J Bras Pneumol. 2018;44(3):178-9. http://dx.doi.org/10.1590/s1806-37562018000030003.
6. Jackson E. Cardiovascular risk of smoking and benefits of smoking cessation. Up To Date. Walthan; 2018. https://www.uptodate.com/contents/cardiovascular-risk-of-smoking-and-benefits-of-smoking-cessation#6. http://dx.doi.org/10.21037/jtd.2020.02.47
7. Duval S, Long KH, Roy SS, Oldenburg NC, Harr K, Fee RM, et al. The contribution of tobacco use to high health care utilization and medical costs in peripheral artery disease: a state-based cohort analysis. J Am Col Cardiol. 2015;66(14):1566-74. http://dx.doi.org/10.1016/j.jacc.2015.06.1349.6.
8. Sherman SE, Link AR, Rogers ES, Krebs P, Ladapo JA, Shelley DR, et al. Smoking-Cessation Interventions for Urban Hospital Patients. Am J Prev Med. 2016;51 (4):566-77. http://dx.doi.org/10.1016/j.amepre.2016.06.023.
9. Corrêa APA. Prevalência e perfil tabágico de pacientes adultos internados em unidades cirúrgicas de um hospital universitário [tese]. Porto Alegre: Universidade Federal do Rio Grande do Sul; 2014.
10. Garcia T, Andrade SAS, Biral AT, Bertani AL, Caram LMO, Cezare TJ, et al. Evaluation of smoking cessation treatment initiated during hospitalization in patients with heart disease or respiratory disease. J Bras Pneumol. 2018;44(1):42-8. http://dx.doi.org/10.1590/s1806-37562017000000026.
11. Campos ACF, Nani ASF, Fonseca VAS, Silva EN, Castro MCS, Martins WA. Comparison of two smoking cessation interventions for inpatients. J Bras Pneumol. 2018;44(3):195-201. http://dx.doi.org/10.1590/s1806-37562017000000419.
12. Rigotti NA, Clair C, Munafò MR, Stead LF. Interventions for smoking cessation in hospitalised patients. Cochrane Tobacco Addiction Group, ed. Cochrane Database Syst Rev. 2012;16(5):1-73. http://dx.doi.org/10.1002/14651858.CD001837.pub3.
13. Instituto Nacional do Câncer. Convenção-quadro para o controle do tabaco [Recurso Eletrônico]: diretrizes para implementação dos artigos 5.3, 8o, 11 e 13. Rio de Janeiro: Inca; 2011 [citado 15 dez. 2019]. Disponível em: https://www.inca.gov.br/ sites/ufu.sti.inca.local/files//media/document//convencao-quadro-para-o-controle-do-tabaco-diretrizes-2011.pdf.
14. Reichert J, Araújo AJ, Gonçalves CMC, Godoy I, Chatkin JM, Sales MPU, Santos SRRA. Diretrizes para cessação do tabagismo. J Bras Pneumol. 2008;34(10):845-880. http://dx.doi.org/10.1590/S1806-37132008001000014.
15. Stead LF, Bergson G, Lancaster T. Physician advice for smoking cessation. In: The Cochrane Collaboration, ed. Cochrane Database of Systematic Reviews. Chichester, UK: John Wiley & Sons, Ltd; 2008:CD000165.pub3. http://dx.doi.org/10.1002/14651858.CD000165.pub3.
16. Sales MPU, Araújo AJ, Chatkin JM, Godoy I, Pereira LFF, Castellano MVCO, et al. Update on the approach to smoking in patients with respiratory diseases. J Bras Pneumol. 2019;45(3):1-17. http://dx.doi.org/10.1590/1806-3713/e20180314.
17. Brasil. Ministério da Saúde. Vigitel Brasil 2017: vigilância de fatores de risco e proteção para doenças crônicas por inquérito. Brasília: Ministério da Saúde; 2018.
18. Santos JDP, Silveira DV, Oliveira DF, Caiaffa WT. Instrumentos para avaliação do tabagismo: uma revisão sistemática. Ciênc Saúde Coletiva. 2011;16(12):4707-20. http://dx.doi.org/10.1590/S1413-81232011001300020.
19. Dias HM. Programa municipal de controle do tabagismo no município de Juiz de Fora: a especificidade do tratamento na atenção básica [tese]. Juiz de Fora: Universidade Federal de Juiz de Fora; 2012.
20. Araújo AJ, Menezes AMB, Dórea AJPS, Torres BS, Viegas CAA, Silva CAR, et al. Diretrizes para cessação do tabagismo. J Bras Pneumol. 2004;30(Suppl 2):S1-S76. http://dx.doi.org/10.1590/S1806-37132004000800002.
21. Fagerstrom K-O, Schneider NG. Measuring nicotine dependence: a review of the Fagerstrom Tolerance Questionnaire. J Behav Med. 1989;12(2):159-82. http://dx.doi.org/10.1007/BF00846549.
22. Löwe B, Wahl I, Rose M, Spitzer C, Glaesmer H, Wingenfeld K, et al. A 4-item measure of depression and anxiety: Validation and standardization of the Patient Health Questionnaire-4 (PHQ-4) in the general population. J Affect Disord. 2010;122(1-2):86-95. http://dx.doi.org/10.1016/j.jad.2009.06.019.
23. Bush K. The AUDIT Alcohol Consumption Questions (AUDIT-C). An Effective Brief Screening Test for Problem Drinking. Arch Intern Med. 1998;158(16):1789-95. http://dx.doi.org/10.1001/archinte.158.16.1789.
24. Méndez EB. Uma versão brasileira do AUDIT: alcohol use

disorders identification test [tese]. Pelotas: Universidade Federal de Pelotas; 1999.

25. Hughes JR. Signs and Symptoms of Tobacco Withdrawal. Arch Gen Psychiatry. 1986;43(3):289-294. http://dx.doi.org/10.1001/archpsyc.1986.01800030107013.

26. Associação Brasileira de Empresas de Pesquisa. Critério de Classificação Econômica Brasil. 2016 [citado 10 dez. 2019]. Disponível em: http://www.abep.org/criterio-brasil.

27. Miller WR, Rollnick S. Motivational interviewing: preparing people for change. 2nd ed. New York: The Guilford Press; 2002.

28. Richter KP, Faseru B, Shireman TI, Mussulman LM, Nazir N, Bush T, et al. Warm handoff versus fax referral for linking hospitalized smokers to quitlines. Am J Prev Med. 2016;51(4):587-96. http://dx.doi.org/10.1016/j.amepre.2016.04.006.

29. Harrington KF, Kim Y, Chen M, Ramachandran R, Pisu M, Sadasivam RS, et al. Web-Based Intervention for Transitioning Smokers from Inpatient to Outpatient Care. Am J Prev Med. 2016;51(4):620-9. http://dx.doi.org/10.1016/j.amepre 2016.04.008.

30. Gwaltney CJ, Metrik J, Kahler CW, Shiffman S. Self-efficacy and smoking cessation: a meta-analysis. Psychol Addict Behav. 2009;23(1):56-66. http://dx.doi.org/10.1037/a0013529.

31. Mussulman LM, Scheuermann TS, Faseru B, Nazir N, Richter KP. Rapid relapse to smoking following hospital discharge. Prev Med Rep. 2019;15(2019):1-4. http://dx.doi.org/10.1016/j.pmedr.2019.100891.

32. Van der Meer RM, Willemsen MC, Smit F, Cuijpers P. Smoking cessation interventions for smokers with current or past depression. Cochrane Tobacco Addiction Group, ed. Cochrane Database Syst Rev. 2013;8(1):1465-1858. http://dx.doi.org/10.1002/14651858.CD006102.pub2.

33. Portes LH, Campos EMS, Teixeira MTB, Caetano R, Ribeiro LC. Ações voltadas para o tabagismo: análise de sua implementação na Atenção Primária à Saúde. Ciênc Saúde Coletiva. 2014;19(2):439-48. http://dx.doi.org/10.1590/1413-81232014192.04702013.

34. Fellows JL, Mularski RA, Leo MC, Bentz CJ, Waiwaiole LA, Francisco MC, et al. Referring Hospitalized Smokers to Outpatient Quit Services. Am J Prev Med. 2016;51(4):609-19. http://dx.doi.org/10.1016/j.amepre.2016.06.014.

35. Hennrikus D, Lando H, Mccarty M, Klevan D, Holtan N, Huebsch J, et al. The TEAM project: the effectiveness of smoking cessation intervention with hospital patients. Prev Med. 2005;40(3):249-58. http://dx.doi.org/10.1016/j.ypmed.2004.05.030.

36. Cummins SE, Gamst AC, Brandstein K, Seymann GB, Klonoff-Cohen H, Kirby CA, et al. Helping Hospitalized Smokers. Am J Prev Med. 2016;51(4):578-86. http://dx.doi.org/10.1016/j.amepre.2016.06.021.

Received: July 20, 2021
Accepted: March 16, 2022