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Workplace-based Smoking Cessation Intervention in Argentina

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Summary

Smoking in factory workers leads to a higher incidence of diseases, with increased absenteeism, risk of accidents, and a resulting increment in costs for the company. The purpose of the present study was to assess adherence to a specific workplace-based smoking cessation program, and its impact on abstinence and tobacco consumption in Argentinean factory workers. **Methods** The program was developed in 3 factories in Buenos Aires province, with a total of 539 workers. Smokers could join the program freely. Clinical history, dependence degree, concurrent psychiatric morbidity (anxiety and depression), and motivation to quit were assessed in each participant. Treatment with nicotine was indicated in varying doses for each individual patient. Sedatives and anti-depressant agents were prescribed depending on whether anxiety and/or depression criteria were fulfilled. The exhaled CO was measured as an abstinence marker. Intervention lasted a year and treatment and follow up from the initial assessment in the office to the end of intervention, lasted 9 months. **Results** Smoking prevalence was 33.7% and average consumption, 14.5 cigarettes/day (2-40 cigarettes/day). Stages of change analysis showed that 7.4% of smokers had never thought of quitting, 24.2% had thought of quitting but had never tried, and 65.8% had tried at least once in the past but unsuccessfully. Finally, 1.8% of smokers were making an attempt at abstinence at the moment of intervention, and 64.6% claimed they needed medical help to attain abstinence. Most patients had a moderate physical dependence, based on the Fagerström test. Out of 182 smokers, 130 (71.4%) adhered to the program and decided to start therapy. Continuous abstinence rates, documented by CO (<12 ppm), was 60.7% after three months of treatment, 42.3% after six months, and 36.1% after nine months. Consumption fell significantly from baseline to end of treatment in those individuals that did not attain abstinence (18.7 vs. 7.3 cigarettes/day, respectively). Six years after a survey was made and it showed that 33% of the smokers referred to maintain the abstinence. **Conclusions** These results suggest that most smokers want to quit the habit and that a workplace-based smoking cessation intervention with pharmacological therapy and follow up is highly effective in promoting tobacco abstinence.

Key Words > Tobacco treatment, Workplace intervention, Smoking cessation program

Resumen

El problema del tabaquismo en las plantas fabriles se traduce en un aumento en la incidencia de enfermedades, mayor ausentismo en los trabajadores y mayor riesgo de accidentes con el consiguiente incremento de los costos para la empresa. Debido al síndrome de abstinencia, prohibir fumar sin tratamiento sustitutivo puede acompañarse de una disminución en el rendimiento físico e intelectual del fumador con un posible costo adicional. **Objetivo** Evaluar la adhesión y el impacto en la abstinencia y el consumo de tabaco, de un programa específico para dejar de fumar en trabajadores de plan-

tas fabriles de la Argentina. **Material y Método** El programa se desarrolló en tres plantas de la Provincia de Buenos Aires, con un total de 539 trabajadores. Los fumadores podían adherirse libremente al programa. Se evaluaron los antecedentes clínicos de cada paciente que adhirió al tratamiento, el grado de dependencia, la comorbilidad psiquiátrica (ansiedad y depresión) y la motivación para el abandono. Se prescribió un tratamiento con nicotina con dosis diferentes según cada paciente. Se prescribieron tranquilizantes y antidepresivos, según los pacientes cumplieran criterios de ansiedad y/o depresión. Se midió el monóxido de Carbono (CO) espirado como marcador de la abstinencia. La intervención duró en total un año y el tratamiento y seguimiento desde la evaluación inicial en el consultorio hasta el final de la intervención, 9 meses. **Resultados** La prevalencia de tabaquismo encontrada fue de 33.7% y el consumo promedio de 14.5 cigarrillos/día (2 - 40 cigarrillos/día). El análisis de las etapas de cambio mostró que el 7.4% de los fumadores nunca había pensado en dejar de fumar; el 24.2% había pensado en dejar de fumar pero nunca lo había intentado y el 65.8% lo había intentado al menos una vez en el pasado pero sin éxito. Finalmente el 1.8% estaba intentando la abstinencia en el momento de la intervención. El 64.6% declaró necesitar ayuda médica para lograr la abstinencia. La mayor parte de los pacientes presentaba una dependencia física moderada según el test de Fagerström. Del total de 182 fumadores, 130 (71.4%) adhirieron al programa y decidieron comenzar tratamiento. La abstinencia acumulada, confirmada por CO (< 12 ppm), a los tres meses de tratamiento fue de 60.7%; a los seis meses de 42.3% y a los nueve meses de 36.1%. El consumo, entre el basal y al finalizar el seguimiento, cayó significativamente en aquellos sujetos que no lograron la abstinencia (18.7 vs 7.3 cigarrillos/día respectivamente). Seis años después de la intervención, se realizó una encuesta a fin de determinar cuantos quedaron abstinentes y se constató que el 33% mantenía la abstinencia. **Conclusión** Estos resultados permiten concluir que la mayor parte de los fumadores de plantas fabriles desea dejar de fumar y adhiere a un programa específico y que la intervención con tratamiento farmacológico y seguimiento es altamente eficaz en el largo plazo para promover la abstinencia de tabaco.

Palabras claves > Tratamiento tabaquismo, Programa cesación de fumar

Introducción

Smoking is one of the leading causes of morbidity and mortality that can be prevented and treated. Tobacco-related diseases that affect both active and passive smokers are cancer, vascular diseases and respiratory diseases¹⁻⁵. Although smoking cessation reduces the risk of developing these diseases and premature death, in some cases ultra structural injuries can last several years⁶. Nevertheless, the major difficulty in achieving smoking abstinence is tobacco addiction⁷.

Smoking among factory workers leads to a higher incidence of diseases, with a resulting increase in absenteeism and in the risk of accidents, which in turn raises production costs^{1,8}. In many factories, there is an explicit smoking ban. However, forbidding smoking during working hours

without providing replacement therapy can cause a decline in physical and intellectual performance, due to the associated withdrawal syndrome⁹, which in turn may result in additional costs for the company. Research suggests that workplaces bans of smoking have a significant but limited effect on prevalence and consumption of tobacco¹⁰⁻¹². Most smokers want to quit smoking and have made several unsuccessful attempts, thus requiring medical treatment to achieve their goal¹¹.

Smoking cessation for both white and blue-collar workers is likely to be highly influenced by the implementation of specific quit-smoking programs which focus on increasing and maintaining motivation, improving withdrawal symptoms, managing consumption-related psychiatric comorbidities, and preventing secondary effects, such as weight gain. However, to date no reported experience has

shown that implementing specific programs focused on these factors could achieve long-term abstinence in these populations of Latin-American countries.

The purpose of the present pilot study was to assess adherence to a specific smoking cessation program, and its impact on abstinence and tobacco use in Argentine factory workers motivated to leave their tobacco consumption.

Subjects and method

Participating Worksites

The program was implemented successively using the same protocol in three factories, one from a plastic industry and the others from the pharmaceutical industry from Buenos Aires province, Argentina, with a total of 539 workers. All companies had decided to take specific action to attain a tobacco-free factory in a year's time.

Recruitment Procedures

Smoking prevalence and level of tobacco consumption were determined at baseline in each factory by a questionnaire, and spaces for smoking were limited over successive dates, until the factory was tobacco-free on a pre established date set one year ahead. The staff was notified about the decision to implement the smoking cessation program, and smokers were invited to join at no cost. Talks to provide information and enhance motivation were held for all staff members, including smokers and nonsmokers. The talks addressed subjects such as tobacco-dependence, its causes, its treatment and the health impact on both active and passive smokers. Each worker was given a questionnaire to fill out after the talks, aimed at assessing, in the smoker population, level of interest and motivation to quit smoking and the need for medical help to achieve abstinence. Lists of smokers motivated to receive more information or to quit smoking were made, taking into consideration the stage of change they were in. After that we contacted them to start treatment. This first phase of the program lasted approximately 3 months.

Measures

On the first visit, a standardized clinical chart was completed with the clinical history of each patient, nicotine dependence as measured with the Fagers-

strom test¹³, concurrent psychiatric morbidity (anxiety and depression) as assessed by the HAD questionnaire¹⁴, and DSM IV criteria¹⁵, and motivation for quitting. A general clinical examination was performed and exhaled CO was measured as described¹⁶.

Smoking Cessation Intervention

Staff members trained in tobacco-dependence therapy interviewed all smokers that chose to participate the program. No standardized pharmacological treatment was systematically prescribed and thus nicotine replacement therapy was instituted by means of nicotine patches and gum as needed, with varying doses for individual patients, based on dependence degree and tobacco use. Nicotine was maintained during from 1 to 3 month attending the initial dose of each treated smoker. Sedatives (benzodiazepines) and antidepressant agents (serotonine reuptake inhibitors, preferably) were also prescribed when necessary in standard dose, depending on whether diagnostic anxiety and/or depression criteria were fulfilled on the first visit or in the follow-up visits, and were maintained for several months according to the clinical evolution of each patient. Patients were seen on an average of 1 visit every 15 days during the first 3 months, and 1 visit every 20 or 30 days the following 6 months. During each follow-up visit, the patient was interviewed about withdrawal signs and symptoms, potential nicotine overdose, secondary effects of psychotherapeutic medication, difficulties with abstinence, appetite, weight, and physical activity, and exhaled CO was measured as an abstinence marker. Guidance and council were given to help maintaining motivation, diet, and physical activity. Intervention lasted approximately a year, and individual treatment and follow up from baseline assessment lasted 9 months.

Results

Factory Worker Characteristics

The results of the three participating factories are presented as pooled data (Table1). Smoking prevalence among factory workers was 33.7%; 123 men and 59 women, with an average age of 41 (23-65 years). Average tobacco consumption was 14.5 cigarettes/day (2-40 cigarettes/day). The analysis of the stages of change showed that 7.4% of

Table 1. Demographic and clinical data of the different factory workers

	Factory 1	Factory 2	Factory 3
n° smokers / n° non-smokers	18 / 55 (32.7%)	134 / 400 (33.5%)	30 / 84 (35.7%)
n° of motivated smokers	13 / 18 (72.2%)	92 / 134 (68.7%)	25 / 30 (83.3%)
decided to be treated / n° smokers age of smokers	40.7 (24-60)	40.1 (23-65)	45.4 (24-63)
consumption (cigarettes / day)	14.2 (2-35)	13.9 (2-40)	15.8 (2-30)
continuous rate abstinence 3 month	8 / 13 (61.5%)	58 / 92 (63%)	13 / 25 (52%)
continuous rate abstinence 6 month	7 / 13 (53.8%)	37 / 92 (40.2%)	11 / 25 (44%)
continuous rate abstinence 9 month	6 / 13 (46%)	31 / 92 (33.7%)	10 / 25 (40%)

smokers had never thought about quitting, 24.2% had thought about quitting but had never tried to quit, and 65.8% had tried unsuccessfully at least once in the past. Finally, 1.8% of the workers reported that they were making an attempt at abstinence at the moment of intervention. Sixty-five percent of smokers indicated that they would need medical help to attain abstinence. Most patients had a moderate physical dependence, as measured by the Fagerström test¹³.

Participants in Smoking Cessation Program

Out of 182 smokers, 130 (71.4%) were motivated and they decided to participate in the smoking cessation program. The other 52 decided to continue their tobacco consumption. Eighty-two percent of these participants received nicotine in transdermal patches at necessary dose, and 58.4%, received nicotine in 2 mg chewing gum. Based on clinical evaluation, 64.4% were prescribed short-term anxiolytic (e.g. benzodiazepine or benzodiazepine-like tranquilizers) at standard dose and 12% were prescribed anti-depressant therapy to moderate withdrawal symptoms.

Smoking Cessation Outcomes

At three month on treatment, 60.7% of participants were continuously abstinent (confirmed by CO <12 ppm); 42.3% after 6 months; and 36.1% after 9 months (Figure 1). The consumption of cigarettes, decreased 61% in those individuals who did not achieve abstinence at the end of follow up. As the 52 non-participant decided to leave with their tobacco consumption. No data from this population was obtained at the end of the program.

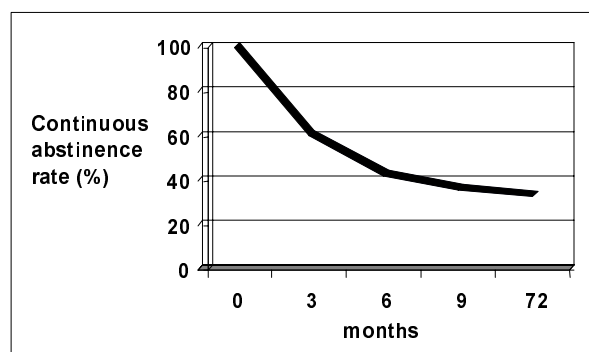


Fig. 1: Continuous abstinence rates documented by CO (<12 ppm) at 3, 6 and 9 months.

Six years after ending the program a survey was made by the physicians of the department of factories occupational medicine and it showed that 33% of the smokers referred to maintain the abstinence.

Discussion

We report here our experience of an interventional program for tobacco reduction in a Latino-American workplace. This pilot study shows the effectiveness of a pharmacologically-based intervention for tobacco abstinence in factory workers from Buenos Aires, Argentina. To our knowledge, there are no specific interventions published to date about smoking and its medical management with pharmacological therapy and counseling in factory workers either in the short or the long term in Latino-American countries. Intervention in such population has two advantages: regular and closely monitored follow up given the labor characteris-

tics of the study group, and the ability to evaluate abstinence with biological markers over an extended period.

Continuous abstinence rates in this uncontrolled study are higher than in other published studies including pharmacological support¹⁷⁻¹⁹. There may be several reasons for this. The regular and closely monitored follow up allowed changing the prescribed medication as needed, and counseling appeared to reinforce smokers motivation to continuing abstaining, when necessary. Motivation to take part in the program, and a competitiveness to attain and maintain abstinence between the participants appeared to “spread” among smokers in all factories incorporated in the study.

On the other hand, although participation in the program was completely voluntary the managerial decision to implement such a program in the factories involved may have played a role in the observed participation and abstinence rates. The influence of the smoke free policy action taken by the factory managerial staff on workers’ motivation to quit was not measured in the present study. However, in a recent review of the impact of abstinence achieved through a smoking ban imposed by managerial staff, without specific treatment, in factories from the United States and Europe abstinence was 3.8% and tobacco use decreased by an average 3.1 cigarettes/day in individuals that continued smoking¹⁰. The progressive reduction in spaces where smoking is permissible, may have also played a role in promoting participation and abstinence.

Pharmacological therapy and counseling were probably the mainstays in the achievement and maintenance of abstinence during the 9-month follow up. In previously published studies, abstinence rates in individuals managed with nicotine substitutes, and/or nicotine and antidepressant agents were significantly higher, compared to individuals that were not treated or received placebo¹⁷⁻¹⁹. Nicotine replacement has been extensively used in controlled studies, and it is effective and well tolerated even in patients with high cardiovascular risk^{20,21}. We used, as advised, a standard nicotine dose based on dependence degree and tobacco consumption.

There is evidence in current literature that the use of certain agents such as bupropion can improve abstinence rates in smokers¹⁷. In this pro-

gram, we did not use bupropion since it was not available in Argentina at the time of the study. The therapeutic regime included antidepressant agents a standard dose only in patients with a history of depression or symptoms of a depressive event in the initial or follow-up visit. These agents were not used systematically as in other studies^{17-19, 22, 23}. We advise their use only in patients that fulfill diagnostic criteria for depressive events. The co-morbid association between tobacco and depression is well known nowadays, with each acting as a risk factor for the other^{24, 25}. Depression can also be part of the withdrawal syndrome and a cause of relapse²⁶.

The use of benzodiazepine or benzodiazepine-like tranquilizers is controversial, since there are few studies supporting a significant improvement in the abstinence rate with these agents^{19, 27}. However, there are two reasons to think that anxiolytics could contribute to smoking cessation. On one hand, anxiety can be a symptom of abstinence, and, on the other, smoking seems to be partly due to a deficit of certain neurotransmitters, such as dopamine and norepinephrine, all raised by anxiolytic administration. None of the studies published to date shows that these drugs might help smokers to quit, but a potentially beneficial effect of anxiolytics, given the scarce evidence, can not be definitively ruled out, especially if used as adjuvants of other drugs.

The same therapeutic regime was used in the three factories involved with similar results. Nevertheless, the results of this pilot study need to be evaluated in future randomized clinical studies.

Conclusion

In spite of the limitations of an uncontrolled study, the results of this pilot study suggest that: a) The majority of smoking factory workers in Argentina wish to quit smoking, and will adhere to an initiative promoting tobacco abstinence; b) in factory workers, smoking cessation interventions which includes both pharmacological and counseling support and follow-up may be highly effective in promoting sustained smoking cessation; c) widespread implementation in factories of similar programs by adequately trained healthcare providers has the potential to significantly reduce tobacco prevalence and consumption in the workplace and in the general population.

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