A pilot study combining an individual-based counseling smoking cessation counseling, pharmacotherapy and a dental hygiene intervention

Semira Gonseth, MD, Marcelo Abarca, DDS, MS, CertPerio, Carlos Madrid, MD, DDS, PhD, MS, Jacques Cornuz, MD, MPH.

Department of Ambulatory Care and Community Medicine, Lausanne University Hospital, 1011 Lausanne, Vaud, Switzerland.

Correspondence to:

Dr. Semira Gonseth
Department of Ambulatory Care and Community Medicine
Lausanne University Hospital
44, Bugnon Avenue
1011 Lausanne
Switzerland
semira.gonseth@hospvd.ch
Phone: +41 21 314 78 07

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ABSTRACT

Aims and purpose

Dentists are in a unique position to advice smokers to quit by the ability to integrate the various aspects of oro-dental diseases into an effective counseling. This pilot study aimed at assessing feasibility and acceptability of integrating dentists in a usual smoking cessation intervention.

Design and Methods

Thirty-nine smokers willing to quit received an 8-week smoking cessation intervention combining brief individual-based counseling and NRT and/or bupropion provided by a general internist. In addition, they received an oro-dental intervention, combining a dental exam, an oral hygiene treatment and information about chronic effects of smoking on oral health. Outcomes were acceptability and global satisfaction at the end of this intervention, as well as biochemical confirmed smoking abstinence at 6-month.

Results

Thirty-nine adult smokers were included, and 27 (69%) completed the study. Global satisfaction and acceptability of the dental intervention were high (94% yes, 6% rather yes). Annoyances dues to the oro-dental exam were described as acceptable by participants (61% yes, 23% rather yes, 6%, rather no, 10% no). Participants provided with very positive qualitative comments about the dentist counseling, the oral exam, and the resulting motivational effect, emphasizing the feeling of oral cleanliness and health that triggered smoking abstinence. At the end of the intervention (week 8), 17 (44%) participants reported smoking abstinence. After 6 months, 6 (15%, 95% CI 3.5 to 27.2) reported a confirmed smoking abstinence.

Conclusions

Our study explored a new multi-disciplinary approach combining a smoking cessation clinic's counseling provided by a clinician and an oral intervention provided by a dentist in helping smokers to quit. Our results in terms of satisfaction, acceptability and feasibility confirm that we can pursue the investigations in this field. Although the results of smoking abstinence must be interpreted with the caution due to the small sample size and the non-controlled study design, the observed rate was similar to those found in previous smoking cessation trials. In order to assess a potential additional impact of a dentist's inervention, we are planning to test a modified study design intervention, allowing regular contacts between the dentist and the participants until the end of the follow-up, in order to strengthen the dentist's motivational effect.

INTRODUCTION

Tobacco use is the first cause of preventable mortality in industrialized countries.[1] Only 0.5 to 3% of smokers who initiate a spontaneous smoking quit attempt stay abstinent after 12 months.[2] An intervention combining individual based counseling by specialized health care professionals and a nicotine replacement therapy of the tobacco dependence gives in average a 17% rate of tobacco abstinence after one year.[3] New strategies to improve smoking cessation rate at a quit attempt are strongly needed.

Dentists and hygienists have a great potential for helping smokers to quit smoking [4-6], but this potential seems often-underused.[7-18] The point a dentist finds out periodontal lesions related to smoking seems to be a *teachable moment* to change this behavior.[19 20]

However, to our knowledge, no study has explored whether smokers desiring to stop smoking and visiting a primary care setting could find an aid from dental health care professionals.

Before conducting a randomized controlled trial to assess the potential additional benefit of a dentist's intervention during the smoking cessation process, we performed this pilot study that aims at assessing feasibility, acceptability, and practical aspects of a dentist's intervention added to the smoking cessation clinic's usual care for smokers of the general population desiring to quit. As secondary outcome, we measured 6-month continuous abstinence rate.

METHODS

Study design and participants

Study participants were recruited through public advertisements in the hospital area and in local newspapers. Interested participants were invited to call the study center. Description of the trial was provided and a pre-screening interview was made on the phone. Participants who met inclusion criteria were convoked for a first visit. At first visit, oral and written

explanations of the trial were given about participant's implication, risks and benefices. Participants gave their written informed consent. Afterwards, we took detailed medical, oro-dental and smoking histories. Anthropometric measures were obtained, i.e. arterial blood pressure, self-reported body weight and height, and carbon monoxide expiration rate.

Inclusion criteria were the following: age between 18 and 70; currently smoking for ≥ 3 years at least 10 cig./day; motivation for quit smoking of 6/10 or more on the Likert's Scale (from 0 to 10).

Exclusion criteria were the following: current pharmacological use to quit smoking; presence of an unstable or life-threatening medical condition; current psychiatric illness; at risk alcohol consumption; illegal drug consumption, such as cannabis; meeting American Heart Association's criteria for antibio-prophylaxis before oro-dental intervention[21]; long-term bisphosphonate treatment [22 23]; recent oral hygiene intervention (< 6 months).

Smoking cessation intervention

All participants received an 8-week smoking cessation intervention, including individual-based smoking cessation intervention combining replacement therapy and/or bupropion and 4 sessions of counseling. Counseling was based on national and international current guidelines, targeting the increase of motivation to quit smoking[22], the identification of barriers, and the prevention of relapse[23 24]. Participants received a combination of nicotine replacement therapy (transdermal patch 16-hour/day or 24-hour/day, 1-mg or 2-mg lozenge, 2-mg or 4-mg gum, 10-mg inhaler) and/or bupropion, according to participant's past experiences and preferences.

Participants were asked to plan a quit date from inclusion day until the 4th visit at 8-week. They were considered as smokers if they failed or if they relapsed afterwards.

Participants lost during the follow-up were recalled and were send letters explaining the scientific implications and the need for a follow-up, and we invited them to contact us.

Oral intervention was provided by a dentist specialized in periodontology (MA) and included two visits. At the first visit, the dentist performed an oro-dental exam to rule out oro-dental lesions, e.g. periodontitis, gingivitis, and other oral or dental lesions. At the end of this visit, the dentist orally explained the results of the oro-dental exam, i.e. detailed explanations of the lesion(s), and recommended treatment if necessary. He provided also standardized information about chronic effects of smoking on oral hygiene (e.g. bad breath, esthetic sequels), about chronic effects of smoking on oral health (e.g. increased risk of oral cancers or periodontitis), and brief explanation about periodontitis (a chronic infection of periodontal tissues, beginning with a gingivitis and gingival bleeding, that is often hidden by smoking). The dentist also provided oral and illustrated explanations of dental plaque, and made a practical and individualized demonstration of oral hygiene techniques, e.g. correct teeth and tongue washing, correct dental floss/sticks use. At the second visit one week later, the dentist performed an oral hygiene treatment, using the Full mouth periodontal debridement technique with an ultrasound device (EMS®-Air Flow® S2).

Data collection

Acceptability and feasibility of oral health intervention was assessed by a hetero-administrated evaluation questionnaire comprising four questions on global satisfaction, on acceptability of potential physical annoyances due to the dentist's intervention, and on the duration of the intervention, as well as two other open-questions on advantages and disadvantages of the dentist's intervention. The questionnaire was administrated by the study staff of the smoking cessation clinic.

A follow-up visit was scheduled at 6-month for participants that were abstinent at the 4th visit. The recruitment was conducted from November 2007 to May 2008. The follow-up ended in Autumn 2008. Continuous smoking abstinence was defined as self-reporting of continuous smoking abstinence from the 8-week visit to the 6-month visit, and biochemical validation by an expired carbon monoxide rate less than 10 ppm.[25] A maximum of 5 cigarettes smoked during the abstinence period was tolerated.[25]

Statistical analyses were performed using the STATA/IC 10.0 software.

The Lausanne University's Medical School Ethics Committee approved the research protocol.

RESULTS

As reported in Figure 1, a total of 86 interested people called the study center. Among them, 39 adult smokers meeting including criteria were included in the study. The withholding rate in the primary phase of the study (including the second visit) was 94.8 % (37), and 87.1 % (34) at the third visit. The participation rate until the last visit at the 8th week was 69 % (27).

Mean age of the subjects was 36 years (range 22–53 years), 59% of the subjects were women, mean (SD) body mass index was 22.4 (3.06) [kg/m^2], mean systolic and diastolic blood pressures (SD) were 126.9 (2.3) and 80.5 (1.8) [mmHg], mean (SD) number of daily smoked cigarettes was 18.7 (8.0), with a mean (SD) expired carbon monoxid of 18.1 (1.8) [ppm], and 18% of the subjects had a high level of education. 97% of the participants made at least one previous quit attempt. Nicotine replacement therapy was used by 97.0% of the participants. At the 8-week visit, the proportion (SD) of participants that were using transdermal patches was 50% (9.9), lozenges or gums 57.7% (9.8), inhalers 19.2% (7.8), and bupropion 3.8% (3.8).

As described in the Figure 2, participants were globally satisfied of the dental intervention (94% yes, 6% rather yes). The duration of the dental intervention was considered as

acceptable by most of the participants (87% yes, 10% rather yes, 3% rather no). The potential annoyances due to dental intervention were considered as acceptable (61% yes, 23% rather yes, 6%, rather no, 10% no). The majority of the participants would recommend this intervention to a friend (87% yes, 9% rather yes, 3% rather no).

Participants gave positive qualitative comments about the motivational effect of explanations on their dental and oral status related to smoking habits, for example “The very good dentist’s explanations about the effect of tobacco use on oral health were motivating”. They also reported positive comments about the feeling of oral cleanliness and health that encourages smoking abstinence, for example, “Once my teethes were clean, I did not want to spoil it”, and few negative comments highlighted too much insisting on tobacco related oral diseases, such as “What the dentist said about the effects of tobacco on the mouth was exaggerated”.

At the end of the intervention (week 8), 17 (44%) participants were abstinent from smoking. At the 6-month follow-up visit, 6 (15%, 95% CI 3.5 to 27.2) reported a biochemical confirmed continuous smoking abstinence.

The oral exam revealed that the vast majority (59%) of the participants had an unhealthy oro-dental status. Eleven participants (28.2%) presented some signs of gingival inflammation, such as bleeding, and 12 (30.8%) had some degree of periodontitis. Moreover, (5.1%) of the participants presented an aggressive parodontitis. Three participants presented otherwise a pre-cancerous lesion such as hyperkeratosis of the tongue (1) or gingival leucoplakia (2).

DISCUSSION

The feasibility of the dentist’s intervention during a smoking cessation quit attempt made in a smoking cessation clinic could be considered as appropriate. The method of participants’ recruitment was suitable, since it required two advertisements in the local press and few advertisements in the hospital area to obtain a sufficient number of participants. Moreover,

our subjects were representative of the smokers from the general population, in terms of age, number of smoked cigarettes per day, proportion of men and women, and scholar education level.[26] The participation rate is in concordance with those found in other smoking cessation studies (60 to 70%).[27] [28] We obtained a particularly high retention rate during the primary phase of the study.

Acceptability of the dentist's intervention might also be considered as high. Even though the participants of our study were smokers that sought first medical help for smoking cessation, we succeeded in obtaining high global satisfaction, and acceptability towards this oral intervention. In addition, participants provided with positive qualitative comments about the dentist counseling, the oral exam, and the resulting motivational effect.

Besides, and with the caution due to the design of this study, i.e. a non-controlled pilot study with a small sample size, we measured 6-month continuous smoking abstinence rate. The results were similar to the observed rates of smoking quit attempts managed in smoking cessation clinics.[29] We observed a high initial cessation, since almost half of participants had quit smoking 6 weeks after the second dentist intervention. Oral effects of smoking, i.e. esthetic sequellae, bad breath, gingival deterioration, are more visible than other smoking related health consequences, such as athero-sclerosis or pulmonary lesions. The dentist intervention helped the smokers to identify their own oral lesions due to smoking – and the oral exam revealed in facts that the majority of the participants presented oro-dental effects of tobacco. Indeed, the participants described such a motivational effect in their comments. However, the design of our intervention did not allow any further contact between the participants and the dentist until the end of the study. It might be possible that this motivational aid was then missing during the consolidation stage. Additional contacts with the dentist could reinforce the motivation to stay abstinent from cigarette and could minimize relapse during follow-up.

Almost two-third of the participants had an unhealthy oro-dental status, which was surprising regarding to the young mean age of our study's population. The proportion of periodontitis from moderate and severe degrees that were found during the oro-dental exam was important and the proportion of aggressive periodontitis - a rare aggressive disease of gums and alveolar bone leading to a loss of teethes- was two-fold higher than the proportion occurring in the general population.

In conclusion, our study confirmed the feasibility and acceptability of a new multi-disciplinary combining a usual smoking cessation counseling with a dentist's intervention. Taking into considerations the results of this pilot study and the discussion, we suggest to pursue investigations of the oral health professionals' role into smoking cessation help for smokers from the general population. Moreover, regarding to the actual prevalence of periodontitis in our study population, the meaning of a automatic screening of periodontitis among the smokers seeking help to quit smoking eventually performed by previously trained general internists might be considered and evaluated. We are planning to conduct a larger study with a modified study design, including regular contacts between the participants and the dentist during the consolidation stage, in order to reinforce the motivational impact of the dentist intervention.

CONFLICTS O FINTEREST

The authors declare no conflict of interest.

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Figure 1. Flow Chart.

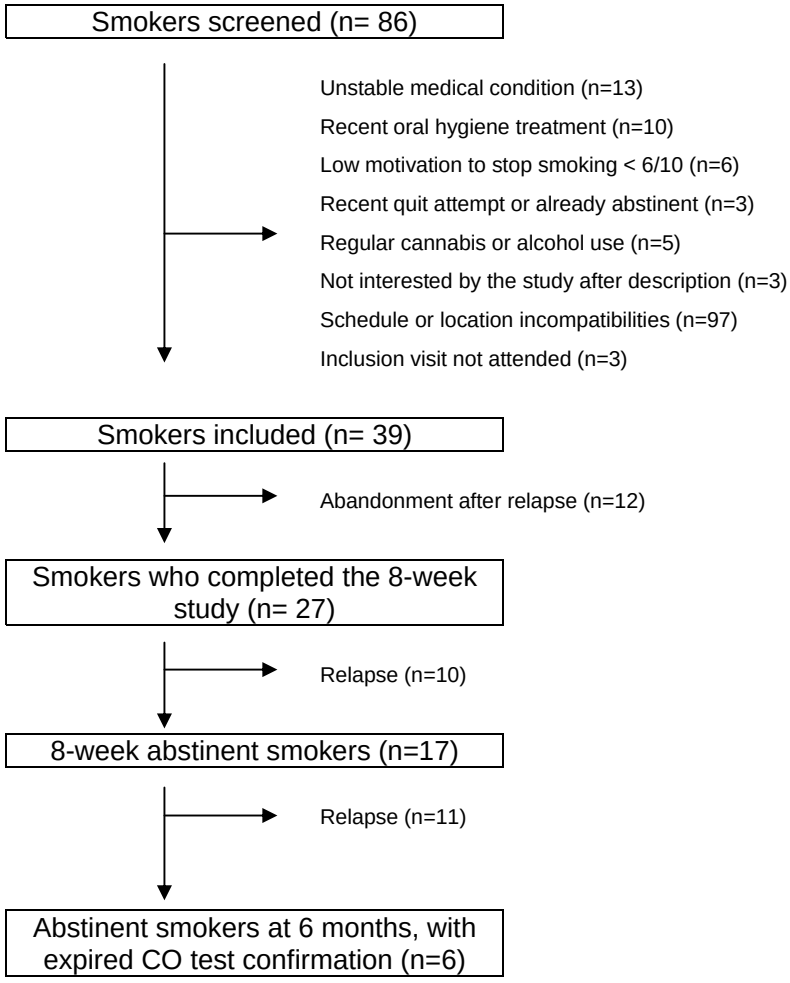
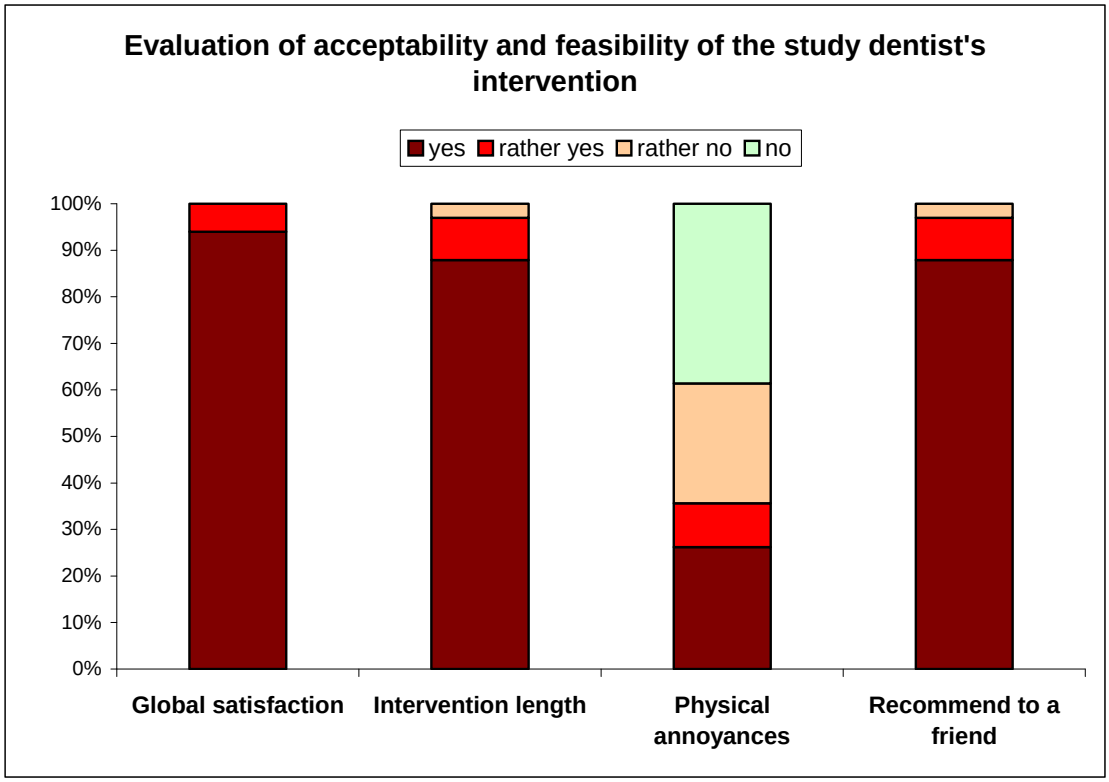


Figure 2. Qualitative assessment of the study intervention.



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